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### Increased Productivity in British Industry

THE increased productivity of British industry is shown in the June trade figures announced this week by the Chancellor of the Exchequer. The provisional value of United Kingdom exports, said Sir Stafford Cripps, was £175,900,000 in June, a month of only 25 working days. Adjusted to a standard month of 26 working days, the figure would be £182,900,000, slightly above the record May total of £182,600,000. One of the most remarkable increases in output is that of the steel industry, which is by no means, of course, all destined for export. The total steel output in the first half of this year was 8,309,000 tons. This is a record for any six-monthly period, and is 351,000 tons higher than the previous best half-year, which was the first half of 1949; the month was itself a record June. Compared, however, with this indication of increased earning power, the excess of imports over exports is not encouraging. Imports were valued provisionally at £238,600,000, of which, however, re-exports accounted for £6,200,000. The value of June imports was a record. Last year, imports rose to a peak in June, and the pattern for this year is similar, though the rise in the last three months has been rather steeper. The excess of imports over exports and re-exports was £56,600,000, making an adverse visible balance for the first half of 1950 of over £220 million, compared with £199 million for the same period of 1949, and with £230 million for the second half of that year. Even if invisible exports such as those of the growing British tourist industry are set against this, the news that this country is still living so far above its income is disturbing. Much has been, and is being, done to increase production in British industry, especially in heavy industry and in the engineering and allied trades; the reports, for instance, of the several productivity teams which have visited the U.S.A. show acute awareness of the problems and the efforts made to solve them. In overseas marketing there is also a great deal of activity on the part both of private enterprise and of the bodies set up by the Government and by the industries themselves. Solvency will not be achieved unless the adverse balance is reduced; and without reducing the standard of living the only way to reduce the balance is to raise production even higher.

### The Value of Team Work

INCREASING mechanisation provides a means whereby British Railways can achieve greater economy and efficiency. Modern machines and modern methods, however, although necessary to progress, show little lasting result without the will and the ability to work them. This means in effect that from the smallest unit to the whole British Railways must work as a team. Especially does this rule apply to the civil engineering and signal and telegraph departments, whose 96,000 staff are engaged in small units in all parts of the country, where there are 52,000 miles of track. With the object of encouraging team work, every effort is being made to arrange for discussions between technical and administrative officers and the staff, frequently through the new consultative machinery. The July issue of the *British Railways Magazine* has an article which shows how technical improvements are paving the way for greater efficiency and how the staff are brought into the picture and encouraged to greater effort by the award of prizes for such things as well-kept lengths of track. There is much to be said, also, for the claim that, while tidiness in the way of trimmed hedges, lineside gardens, etc., may seem unnecessary frills, where such neatness exists, the greatest efficiency is usually to be found.

### British Transport Commission Statistics

RECEIPTS from all activities of the British Transport Commission for the fifth statistical period of the year, to May 21, of which details appear elsewhere in this issue, were 7 per cent. above those of the same period in 1949. British Railways receipts, which are two-thirds of this total, were very slightly above last year's figure. This reversal of the recent downward trend is only in part due to the 16⅔ per cent. rise in rail freight rates on May 15, which came too late to have much effect. There was a large increase over last year's road haulage receipts, due mainly to acquisition by the Road Transport Executive, and smaller rises in road passenger transport (also due to acquisition by the Commission), ships, docks, and hotels receipts. All types of London Transport showed a fall in receipts over last year, but rises, largely seasonal, over the preceding period. In British Railways figures, lack of synchronisation between the monthly publication of passenger commercial, and the four-weekly publication of other railway statistics, has meant that March passenger statistics are the latest available. In its present analysis of railway results the Commission draws attention, as was done some time ago in *The Railway Gazette*, to the significance for purposes of comparison of the adjustments earlier this year in British Railways Regional boundaries.

### Wage Increases on Indian Railways

NOW that the Government of India owns the nine principal railways in that country, collectively employing nearly 850,000, it is the largest single employer of labour in any one industry. One result of this unification of ownership is that standard scales of wages and allowances have recently been fixed for skilled and unskilled staff up to inspector grades on all systems. These scales are

materially higher than those in force on State and Company railways before the war to meet the rise in the cost of living. What is known as a "dearness allowance" is granted on a sliding scale in the form either of cash payments or of concession rates at which essential commodities can be purchased at the nearly 600 railway grainshops throughout the country. Approximately 400,000 employees avail themselves of these concessions. Higher cost of living in the cities is met by granting house rent allowances fixed proportionately to the populations of the cities. The remuneration of the lower grades of staff has thus been raised considerably since 1939.

### Other Advantages for Lower Grade Staff

IN addition to the improved financial position of the Indian railway grades mentioned in the previous note, other conditions of employment are improving steadily, and are enjoyed by an increasingly large number of employees. Leave rules have been standardised and the periods earned and leave-pay admissible have been extended to skilled workmen. The amounts of each vary according to the grades of the staff. Hours of work, which include overtime duties and of rest, are uniformly applicable to all railways and provident fund benefits have been extended to practically all employees with more than a year of service. In order to promote "the hereditary talent and *esprit de corps* among railway staff" some 5 per cent. of the vacancies for promotion to the higher grades are reserved "for sons and daughters of railway employees" with 15 or more years of continuous and efficient service. Staff training schools, educational facilities, and social services such as child welfare and maternity centres, are being extended. The lot of the railway worker in India is, therefore, improving in many directions and it it realised that "identity of interest between the railway administrations and their employees is the surest foundation for the future of the railways."

### Hire of Rolling Stock in U.S.A.

RAISING capital for the purchase of new rolling stock has recently become an acute problem in the U.S.A. and last year the railways were in a serious dilemma when numbers of much needed wagons could not be ordered because of the decline in earnings. Considerable interest is being shown in an offer by a life insurance company to purchase new wagons and supply them to the railways on lease. Under the lease terms, involving no cash-down payment, the insurance company will hire the wagons to the railway for an initial period of 15 years, and when that period ends, the railway will have the option either of returning the wagons to the owner or leasing them for a further period. Therefore, should the railways require the wagons no longer, the insurance company runs a considerable risk, unless the cost of the equipment and interest is covered in the terms of the initial hire period. Much of the new diesel motive power in the United States is financed by borrowing and the suggestion has recently been made that some of the large financial houses also might extend their activities in this direction and purchase diesel locomotives for supply to the railway companies on hire terms.

### Track Improvements in Switzerland

CONSIDERABLE progress is being made in Switzerland in the use of longer rails. On main lines of both the Swiss Federal Railways and the Berne-Lötschberg-Simplon Railways the length of rail now being laid is 36 metres or 118 ft. 1½ in. This is within 2 ft. of the 120-ft. rails obtained in a limited quantity by the former L.N.E.R. and L.M.S.R. some years ago. Very substantial advances in rail welding also have been made in Switzerland, especially in tunnels. The Lötschberg Railway, which built and maintains the Grenchenburg Tunnel, (though traffic is worked through it by the Swiss Federal Railways), has welded the single track through the entire length of this tunnel, 5 miles 580 yd., and is doing the same in the Lötschberg Tunnel itself as rail renewal becomes due, some 3¼ miles of the 9⅛ miles of double track having been dealt with so far. Both the Thermit and the Sécheron electric method of welding have been used with success. At a time when Great Britain is abandoning the use of bull-head rails in main lines in favour of the flat-bottom type it is interesting to note that the Lötschberg, unique among Swiss lines as having laid bull-head rails on its steepest main-line gradients, also is substituting flat-bottom track as renewal becomes necessary.

### Bridge Superstructures in India

ELSEWHERE in this issue the summary of an address by Dr. H. J. Nichols, Member of the Indian Railway Board, details modern practice in India towards economy in railway civil engineering design. It has points of considerable interest, but several of the practices quoted have been established in India, as elsewhere, for many years. Among them are the use of plates welded to tension members to compensate for loss of section due to rivet holes, and the pre-stressing of main truss girders, though the latter has usually been confined to spans of over 200 ft.; it is doubtful if any economy or advantage is obtained in its use in smaller spans. The suitability of welding for bracings and other light sections has also been accepted widely for some time. The design of pre-stressed concrete girders up to 60 ft. span, and the use of rigid-frame spans with legs, are however, new in India. The substitution of steel troughing for transverse timber sleeper flooring over steel cross-bracing is not advocated by many experienced railway civil and bridge engineers, who consider that it gives almost no advantage and that there is no evidence that troughing, as advocated by Dr. Nichols, is a suitable form of construction from all points of view.

### Leaving the Gates Unlocked

THE fatal accident which occurred on January 3, 1950, at Second Drove Crossing, between Ely and March, was inquired into by Colonel D. McMullen, and his report, summarised in this issue, has disclosed a disagreeable state of affairs. The gatekeeper, with the knowledge of her husband, the local ganger, had adopted the practice of leaving the gates unfastened at night, contrary to an instruction of which both must have been fully aware. People had thus become accustomed to letting themselves across. A lorry driver did so on the occasion in question and narrowly escaped an accident. He was being followed by a car—and there is little doubt that he knew it—the two occupants of which presumably assumed he was being correctly passed over by the gatekeeper. A train running at about 50 m.p.h. smashed the car completely, and the driver and his wife were killed instantly. The inquiry brought out facts not at all creditable to those responsible for supervising the crossing, and Colonel McMullen has been compelled to criticise them strongly.

### Planning Locomotive Repairs

THE adoption of a longitudinal design of layout as opposed to the cross-pit method of repairs to locomotives is largely a matter of individual preference, although there are factors to be considered in selecting either when new workshops are contemplated. These factors include area available, whether the new layout will include a carriage and wagon repair department, and to what extent future extension is envisaged. Obviously, any future extension should not interfere with the existing flow of materials or track layout, while climatic conditions are also a matter of importance. It has been stated that the longitudinal method is more adaptable to the time repair factor, in that any delay in the belt holds up the movement of other locomotives, and consequently the time factor must be adhered to more rigidly. It is argued, however, that the cross-pit layout enables staff and supervision to be more concentrated. Unforeseen circumstances arising during repairs do not affect the flow to an equal extent. Progress and planning can be applied equally effectively to either the longitudinal or cross-pit layout, and when combined with an intelligent locomotive repair forecast system and

stores control, satisfactory results are obtainable, as forward planning and the time factor are the basis of an efficient shop. Further information is given in an article this week relating to the Eastleigh Works of the Southern Region of British Railways.

### Sales Resistance in Reverse

A MINOR scene developed in a refreshment room recently when a customer, who had been standing hopefully in front of a notice reading "Hot Snacks," complained of inattention. It appeared that he should have lined up with the less fastidious seekers after buns and sandwiches. Clearly he was a novice in refreshment room procedure and acted on the principle that the intending purchaser of stamps in a Post Office does not join the queue for old age pensions. He should have known that by ancient custom it is only those in search of beer who enjoy a section of the counter exclusive to themselves and are served with an occasional gleam of professional joviality. The hot snacks lurked mysteriously beneath a domed cover, their nature being revealed on inquiry in a tone of voice that seemed to embrace both them and their addicts in equal disparagement. Such tactics might prove ineffective against a Commando at the end of a forced march in full equipment. An expectant diner softened by the luxuries of modern travel is more likely to choose a line of less resistance and leave unsolved the riddle of whether the snacks are roast pheasant or sausages and chips.

## Railway Labour Disputes

THE relaxation of the wage-freeze policy which was made effective with devaluation but which recently has been partially modified, has been speedily followed by improvements in the position of the lower-paid railway workers. At a meeting of the railway staff national council on Friday last to consider the claim of the National Union of Railwaymen for an increase in pay for the lower-wage grades, the Railway Executive offered to raise the lowest rate for adult male staff to conciliation grades from 92s. 6d. to 96s. a week. The National Union of Railwaymen has been urging a minimum wage of £5 a week, but the Morecambe conference of the N.U.R. decided to accept the Railway Executive offer and instructed its Executive Committee to this effect. When the offer was made formally to the three unions at a meeting of the Railway Staff National Council, however, the Associated Society of Locomotive Engineers & Firemen and the Railway Clerks' Association did not accept it. The position, therefore, is still open.

The additions to the wages of the lowest paid workers on the railways would add very substantially to the railway labour bill. In view of the present high cost of living, there will be few who will quarrel with the need to improve the lot of the lowest-paid employees on the railways, although in the present financial position of the British Transport Commission, the grant of higher pay to any section can be ill afforded. The unions, and particularly the N.U.R., have already made it known, however, that further demands, not restricted to the lowest income groups, are already on the way.

Last weekend also saw the end of the dispute between the Railway Executive and the enginemen of the former Great Western Railway who are members of the Enginemen's Mutual Assurance Society. It will be recalled that, as a result of a decision by the Railway Executive, membership of this fund, which hitherto had been compulsory, was to be made voluntary as from July 1. Members of the society resisted this decision and the men at Banbury came out on strike. They were to have been supported last weekend by men of other depots, but in the meantime the Railway Executive withdrew the instructions relating to voluntary adherence to the society.

The Banbury strike has reflected little credit on any of the parties concerned. It has certainly proved a very poor example of what is known in modern parlance as "man-management." There can be no condonation of an unofficial strike, whatever the cause, for the essence of trade unionism should be the discussion of grievances through the recognised trade union channels. At the same time, the relative suddenness of the decision to effect the change in a well-established local practice might have been avoided. The reorganisation of railway regional boundaries and the transfer of staff from one Region to another has been going on over a considerable period, and a happier result might have been achieved if the date for the change had been placed further ahead. That would have allowed time for the men to discuss the position, and probably by the date of the implementation of the change, the air would have been cleared. In any event, might not the much-vaunted consultative machinery have been used on this occasion?

The position was not improved by the decision to insist on the Banbury men who were absent from work returning disciplinary forms giving their reasons. If these forms had been completed and returned, would any disciplinary action have been taken? In fact, on this occasion the men refused to comply with the demand, which was then withdrawn. As a result a well-established and useful part of the railway disciplinary machine was weakened. If, as seems only too likely in the light of what has happened in the case of some other unofficial strikes, the intention was merely to collect the forms and subsequently take no action, it is more than a pity that the attempt was made, in view of the mood of the men, to implement the custom. The decision ultimately to abandon the whole business and to allow the previously existing position to continue, has not strengthened the position of the management in its dealings with local bodies of men.

There are wider implications to the dispute than those affecting the Enginemen's Mutual Assurance Society. During its negotiations with that society, the Railway Executive gave its assurance that no member, either voluntary or compulsory, would have his position in regard to supplemental pension in any way worsened by the change. This may be expected to open the door to a strong demand by the Associated Society of Locomotive Engineers & Firemen for acceptance of its claim for a national pensions scheme for enginemen, on the basis that what can be done for some can be done for all. It is more than a pity that "a minor domestic issue," as the Railway Executive itself rightly describes the affair, should have been so maladroitly handled.

## An Independent Survey of Transport

THE British Transport Commission and its control of most of the inland transport services of this country has been the subject for discussion both inside and outside the industry ever since the passing of the Transport Act, 1947. The Press has devoted a great deal of space to the virtues and shortcomings of nationalised transport. In a recent issue of *The Spectator* Mr. Oscar Hobson, in the course of a series of articles on the nationalised industries of this country, devoted considerable space specifically to transport. We made brief reference to one aspect of this article in our June 30 issue, when comment was made on the author's suggestion for the abolition of the endeavour to secure integration of transport.

In the course of his survey of the present transport position, Mr. Hobson touched on a number of other matters. He pointed out that when the Act came into force it was expected that the British Transport Commission would leave the various Executives free to conduct the operation of the various transport services and confine its own energies to matters of high policy. In fact, the Commission has exercised an intimate and detailed control over the Executives and, as a result, there has been an over-centralisation on the railways in an exaggerated degree. There is some justification for this contention. It probably arises from the financial responsibility which rests on the Commission to endeavour to ensure that transport as a whole is made self-supporting. The Chairman of the British Transport Commission, on more than one occasion, has expressed himself strongly in favour of devo-

lution of responsibility, but obviously at times there must be conflict between this ideal and its practical implementation. Mr. Hobson suggests that the obvious remedy for over-centralisation would be for the Commission to delegate complete management, including price policy, to the Executives, but he recognises that one difficulty is that the Act requires the Commission to regard all its businesses as one undertaking and to direct its charging policy to secure an overall balance between outgoings and income.

It also has laid on the Commission the duty of integrating the whole transport system. His way out of this difficulty, as explained in our June 30 issue, would be to abolish the notion of integration and wind up the Commission. He would have a reconstituted Railway Executive and London Transport Executive with full responsibility for running the main-line railways and London Transport respectively. Presumably, although he does not say so, there would need to be some link between these bodies, for if they were completely autonomous there would be no guarantee that they would act in unison on matters which should be of common policy. He doubts whether an Inland Waterways & Docks Executive is needed and he is quite sure that a Hotels Executive is not. Here he is on safer ground, for inland waterways and docks could very well be run as a department of the Railway Executive and there is no good reason why restaurant-car and station refreshment-room services should not be recognised as an integral part of the railway undertaking.

When, however, Mr. Hobson expresses the view that either the Road Haulage Executive should be made an autonomous body, or, preferably, its vehicles and undertakings should be restored to private ownership, we part company with him. To accord complete freedom to the road haulage industry while retaining the railways under State control could result only in a return to the chaos which marked the inter-war years and which resulted in the "square-deal" campaign. There have been many examples throughout the world of the impossibility of running an economic and efficient State-controlled railway system side by side with an uncontrolled privately-owned road transport industry. It is the proposal that freedom should be accorded road transport while retaining control—even if modified—of the railways, which is the weakness of the Conservative Party policy for dealing with British transport. From a political aspect, the proposition may be attractive, but from a practical point of view, it has nothing to commend it.

The functionalism of the Executives, according to Mr. Hobson, will need to be eliminated or at any rate moderated. As he has already, for all practical purposes, abolished all but the Railway Executive, and the London Transport Executive, and only very reluctantly acquiesces in the possible retention of the Road Haulage Executive, it is worth while pointing out that, except in the case of the first-named, functionalism is not a particularly strong feature. Of the Railway Executive, he concedes that there is a case for retaining it temporarily while standardisation is being completed. We have previously suggested that when this is achieved there may well be a greater devolution of responsibility to the Regions and that some reorganisation may then be effected. He suggests that the Executives should be established as boards of directors with control of finance and high policy and that the powers of the Regions could be strengthened. Here is a fundamental matter, which, unfortunately, Mr. Hobson dismisses in a couple of sentences and which could well be the subject of consideration at greater length.

He holds the view that there is no question but that railways can be made financially self-sufficient, provided they are relieved of circuitous and unnecessary forms of control and are free to work out their own salvation. He is still wedded, however, to the idea that a subsidy may be justified, for he says that where the State requires services from them, whether it be in the form of cheap tickets for workmen or the retention for national purposes of uneconomic lines or services, the State must foot the bill. In our view, any form of subsidy, however disguised, must lead to inefficiency of working and to the encouragement of a frame of mind the very opposite to that which is required to put the railways back to a profit-earning position. He is, however, on good grounds for suggesting the restoration of the old annual efficiency review, conducted by the Railway Rates Tribunal, for these provided both the railways and the public with a safety valve and on occasion, the means of removing grievances and difficulties. There will be a very wide measure of agreement with his view that the claim of the N.U.R. to be given joint participation in management should be resolutely resisted. He ends with a very pertinent question, which applies not only to transport, but also to coal and some other State-controlled industries. So far as concerns these nationalised industries, which no political party desires to denationalise, need reform of the present administrative structure be made a party political issue? We are firmly convinced that, if at this stage the political aspect could be eliminated, far more rapid progress could be made in making a number of adjustments which would go a long way towards returning the railways to a profit-earning basis.

## Wood Fuel for Industry and Railways

A PAPER dealing with the use of wood as a fuel for railways and industry in general was presented to the Fourth World Power Conference on July 12 by Mr. Bo Nikander, Power Engineer, Pargas Cement Works, and Mr. Vaino Tamminen, Assistant Manager, Machine Department, Finnish State Railways. The first part of the paper describes the methods of firing wood logs and wood refuse and deals with the design of special furnaces developed for this purpose. During the recent war it became necessary in Finland to burn wood in furnaces originally designed for coal firing. Many years ago in Scandinavia sawmills were using a special kind of furnace outside the boiler to burn wood refuse. The furnace is filled from above and the fuel forms a cone on the plane grate. In the course of combustion, the fuel, with a moisture content of up to 60 per cent., is first dried and then gasified and partly burned. The furnace partly acts as a gas producer. The gas and the necessary secondary air are led through a short channel to the boiler. The disadvantages of this furnace are low efficiency, limited capacity, and the fact that all the wood used must be reduced to a small size. In the 1920s, however, two improved types of this furnace were developed in Finland with larger capacity and higher efficiency.

In Lancashire and Scotch boilers the grate was lowered to give space for more fuel and to make the combustion space larger. In small chain-grate boilers the grate was removed and replaced by a plane grate. In chain-grate boilers of medium size the grate was not removed, only the coal hopper. The firewood was piled on the chain-grate, which was run at great speed. As the front arch seldom allowed the fuel bed to be thicker than 250-300 mm., the content of $CO_2$ was as low as 5-8 per cent., and it was only possible to make use of 24-50 per cent. of the capacity of the boiler. By building new front arches with a free height of 600-800 mm. the thickness of the fuel bed may be doubled. In this way comparatively good results have been obtained, the content of $CO_2$ being 10-12 per cent. The steam production per hour was approximately one ton of steam per sq. m. of grate area. In burning wood chips and refuse in large boilers, with a capacity of 30-40 tons of steam per hour, the transport and handling of wood is extremely laborious. Fire logs may be reduced to chips in a "hog," however, and transport is easily arranged by drag link or belt conveyors. Nevertheless the front arch of the boiler has to be raised to 700-800 mm. to allow a fuel bed of sufficient height. If the fuel bed is 600-700 mm. thick the combustion can easily be carried on using chips with 30-40 per cent. moisture. The steam production depends, as in the former case, mainly on the area of the grate, being as before about one ton of steam per sq. m. grate area. Sawmill refuse with 50-60 per cent. moisture may also be fired on a chain-grate if the refuse is conveyed through a chute and forms a cone on the grate. The grates are run forward about 50 cm. every two hours. The capacity with wood

fuel is 15 tons of steam per hour as compared with 35 tons with coal. The highest recorded efficiency is 72 per cent. If it is desired to change immediately from coal to wood firing or *vice versa*, or if it is desired to use both kinds of fuel at the same time, the boiler may be equipped with two fuel hoppers and two regulating slides. A suitable maximum height for coal is 200 mm. and for wood 800 mm.

In dealing with the second part of the paper, relating to the use of wood fuel on railway locomotives, Mr. Tamminen said that the use of wood fuel in locomotives on the Finnish State Railways was not treated merely as a question of fuels, affecting as it did within certain limits the general conditions of life of a great part of the rural population. In times of emergency and diminishing demand for wood and farm products the Government could by increasing the use of fuel on locomotives to some extent at least provide working facilities in the forests. In times of normal economic conditions, about one third of the railway engines in Finland, about 800, are fired with coal, and the remainder with wood, except for some 60 engines using peat. At the end of the recent war all railway engines, with the exception of four tank locomotives, were adapted for wood fuel. With the increasing demand for wood products it again became possible to import coal, and the railways therefore changed over in part to the use of coal. The maximum number of coal-fired engines in use since the war has been 360. The use of wood as railway engine fuel is relatively uneconomical, due to the expensive handling of the wood, which requires a considerable amount of labour before actual burning takes place. Wood requires more space in tenders than coal, and, taking into account the far greater consumption of wood in regard to volume, it has been necessary to arrange secondary storage stations at a distance of 30-45 miles from fuel centres and depots.

In March, 1945, the total consumption of wood fuel reached a maximum of 260,000 cu. m. per month. The consumption in September, 1949, was 140 cu. m. The transport of wood fuel to the locomotives has been mechanised wherever possible. The loading of 50 cm. long wood logs is carried out by hand into tipping carts containing 2 or 4 cu. m., which are hauled electrically or by other means on to loading platforms to be emptied into the tender of the locomotive. So as to save time, the fuel-loading places have, wherever possible, been combined with the water-supply station. A certain increase in the handling costs of the wood fuel is due to the fact that heavy locomotives may require two stokers when firing wood: furthermore, the use of wood fuel limits the speed of the trains as well as their weight. Sparks from wood fires are of much longer duration and consequently much more dangerous than sparks from coal fires.

Much work has been done on the problem of removing the danger of fire caused by wood-burning engines, and reliable means to this end has finally been found. In the spark-arresting chimney the cylindrical portion is equipped with twelve vanes, the object of which is to give the sparks mingling with the exhaust steam a rotating motion, whereby they split up, coming into contact with vanes and the cylindrical part of the chimney. To prevent sparks which possibly have not been thus extinguished from leaving the chimney, the upper part is provided with a screen. This extra equipment impedes the free passage of flue gases and exhaust steam, and to overcome this disadvantage and to improve the draft, the chimney is equipped with a special blast, while at the same time the diameter of the blast-pipe orifice must be reduced about 10 per cent., which actually causes the lessening of the power and speed of the engine when using wood. In the case of wood fuel pneumatically operated opening mechanism of the slide for the fire door has been found useful. Steam grates may be used for both coal and wood fuel without change. No brick arch is used for wood fuel. The firewood should be fed on the grate as evenly as possible, and in such a way that no air holes ensue through which superfluous air might pass into the fire-box thereby cooling it. The harm caused by such air channels is very soon felt, especially in wintertime, in the less effective steam-generation of the locomotive.

## Water Softening Plant

THERE has recently come to hand a paper on water softening installations for locomotive boiler feed water which was read by Mr. N. L. Deshmukh to the Bombay centre of the Institution of Engineers (India) at the end of 1948. Mr. Deshmukh, who was appointed Engineer-in-Chief, Water Supply, G.I.P.R., in June, 1941, said that a scheme to instal water softening plant on the Poona-Raichur section of the railway was approved in 1940. There were two main methods of softening water used for locomotive boilers, namely, lime and soda and base-exchange.

When treatment of boiler feed water was introduced on a section of a railway, softening had to be done at all watering points on that section to be of any practical use in increasing engine mileage, and for decreasing the cost of engine maintenance. The author explained that the term "section" was intended to mean an administrative section of a railway within which engines could be pooled and intensively used, and that when water has been treated and made suitable for boiler feed, engine runs could be extended considerably. At the same time it was necessary that the softening installations should form part of the supply system at each watering point.

Certain conditions favoured lime and soda to the disadvantage of base-exchange, while other conditions required the opposite, and thus there was an economic plant for each set of conditions. This was the principle on which water softening installations had been based. It was argued in some quarters that different types of plant installed in one section of a railway could create operational difficulties, but experience showed that such difficulties were too minor to be worth consideration. The right policy is to ensure that the best results are obtained with the least recurring expenditure.

## New Looks for Electric Locomotives

IT is often said that the electric locomotive lacks the visual appeal of its steam counterpart because it does not generate its own source of power, but draws supplies from elsewhere. This theory does not agree with the fact that an electric locomotive with pantograph raised makes a more spectacular picture than one that collects current by means of shoes from a live rail, for a pantograph is a very visible sign of dependence on an outside source. The same argument would place diesel or diesel-electric motive power higher in the scale of visual interest than straight electric power, but it does not seem that this is necessarily the case.

At one time ships were provided with redundant funnels to enhance their prestige, but it would be unreasonable to suggest that third-rail electric locomotives should be equipped with dummy pantographs for the benefit of poster artists and the illustrators of popular books on railways. Besides, the pantograph may be ineffective if allied with a body not differing greatly from a coach or van. It is to the bodywork that we must look to create the admiration that is the right of all locomotives—no matter whether they are electric, diesel-electric, diesel or gas turbine.

Much is heard today of industrial design, an art that embraces even such apparently uninspiring objects as electric irons and kettles. All kinds of articles can be endowed with lines that lend them grace and dignity without in any way disguising their true functions. There may be scope for industrial designers in this country to evolve a fitting exterior for the electric locomotive and others like it. The one-time central cab arrangement was not beautiful, but it gave the electric locomotive a characteristic personality. Traces of its influence remain in some impressive modern designs, where a "nose" at each end—snub or elongated—has been retained rather than enlarging the cab to form a wholly coach-type body outline. The central cab undisguised is by no means extinct, of course, and in a few years will be made familiar to a new generation in this country by the Newport-Shildon locomotives of the former N.E.R., now being reconditioned for banking duties on the Manchester-Sheffield-Wath electrification.

# LETTERS TO THE EDITOR

*(The Editor is not responsible for the opinions of correspondents)*

## Steam Distribution on Colonial Railway Locomotives

July 1

SIR,—I venture to suggest, as a comment on Mr. G. V. O. Bulkeley's article in your June 30 issue, that any rational method of determining valve dimensions for a steam locomotive will apply equally to home and colonial engines for freight or passenger service on any gauge.

In the *Engineer* for February 10 and 17, 1950, appeared an article in which the essentials of locomotive cylinder performance were presented on a universally-applicable basis. From that article, the simple answer to the question raised by Mr. Bulkeley is readily extracted. The product of valve diameter and lap for optimum performance is determined by:—

$$VL = \frac{M\ d^2S}{500\ D}$$

where V = dia. of valve
L = lap of valve
d = dia. of cylinder
S = stroke of piston
D = dia. of driving wheels
(all these in inches)
M = speed (m.p.h.) at the middle of the range over which the maximum sustained indicated power is required.

Any combination of V and L that has this product will be satisfactory, except that L should preferably not exceed about 0·2V.

This result is based on the use of Walschaerts valve gear with zero exhaust clearance and with lead equal to about one-tenth of the lap. The performance of Stephenson valve gear is not substantially different, provided that the lead at 25 per cent. cut-off does not exceed one-tenth of the lap. If this involves negative lead in full gear, so much the better.

Yours faithfully,

W. A. TUPLIN

390, Wakefield Road, Huddersfield

## Water Softening Plant

June 12

SIR,—An abstract of a paper read by Mr. A. J. R. Walter at the meeting of the Institution of Locomotive Engineers in London on November 21, 1946, was published in the February 14, 1947, issue of *The Railway Gazette*. Subsequently, you had letters from Mr. C. A. Stead (May 2), Mr. Walter and Mr. S. R. Jackson in your May 2, May 23, and June 20, 1947, issues, respectively. The paper, as well as these letters, condemned one of the two systems, lime and soda and base-exchange. They stated that the system they advocated was the ideal one for use on railways.

In January, 1948, a paper entitled "Economic Types of Water Softening Installation for Locomotives Boiler Feed Water, with special reference to the work undertaken on the Poona-Raichur Section of the G.I.P. Railway," was read by Mr. N. L. Deshmukh at the Bombay Centre of the Institution of Engineers (India). The paper gives the advantages and disadvantages of each of these two processes and proves with figures why a particular type of plant becomes economical in a particular case on different watering points on a railway. It is pointed out that the chemical and physical condition of the water and the engineering conditions of the system of supply differ greatly at the watering points, which are widely separated on a railway. One particular system or type of plant cannot suit all conditions. These considerations, applying to treatment of water supply on railways, have been brought out for the first time and, from the economic point of view, are of great value to all railways where water softening is necessary.

The paper has been reprinted by the Institution of Engineers (India) in its issue of September, 1949, and a spare copy which I have is sent herewith for the information of any of your correspondents who may be interested in it.

Yours faithfully,

K. R. RAI

Kotah, India

[An editorial article on the above paper on water-softening plant appears elsewhere in this issue.—ED. *R.G.*]

## Railway Efficiency

June 5

SIR,—Recently I have received several letters from station-masters with about 40 years' experience complaining of the manner in which our railways are now being conducted. Below is an extract from one of them:—

"I have to suffer the long-distance trains between North and South arriving and leaving 20 per cent. loaded at most—all because ordinary fares are too high—while motorcoaches go through loaded to capacity. If these fares were reduced, there would be no need for special trains at reduced fares, most of which are run at a loss; no printing, advertising, nor special extra service timetables; less accounting in booking-offices, and few types of tickets, with their many restrictions as to days, times and places—which no foreign visitor could possibly understand.

"At the moment, we are neither making a profit nor giving proper service. If we cannot make a profit (and this is possible) let us at least give cheap and reasonable service. There would be fewer grumbles from the public at any rate. . . .

"Millions have been spent on control offices with all the very latest equipment. Yet these offices today are more inefficient than I have ever known them and double the staff are employed. . . . The primary object of control offices—which is the regulation of trains and the prevention of long hours and unproductive time of trainmen—are fast becoming lost arts."

Yours faithfully,

E. R. B. ROBERTS

Eynesbury, St. Neots

## Railway Fares

June 3

SIR,—Mr. E. R. B. Roberts's letter starts by saying, "I have never said anything of the sort" in reference to my charge that he had stated standard fares had been generally reduced. Mr. Roberts should consult his files of *The Railway Gazette* before making such positive statements. He did make such a statement, *vide* the following extract from his letter in your issue of May 6, 1949:—"In that year (1928) the standard fare was 1½d. a mile (3d. return), and although the companies were repeatedly urged to reduce it to 1d. a mile (2d. return) they claimed that if they did so they would lose £10,000,000 a year. A few years later, however, they actually reduced it to 1d. a mile. A couple of years later the return fare was reduced again to 1½d. a mile."

The only reductions in passenger fares between 1928 and 1939 were monthly returns for medium- and long-distance but not short-distance traffic at 2d. per mile, and various day, half-day, evening, and so on, excursions at 1½d. a mile or less, some available by specified ordinary trains and some by special excursion trains. Apparently, these are the fare reductions Mr. Roberts refers to as having increased rail receipts in every case, and he should therefore be well satisfied with the present policy of the Railway Executive, as, except that monthly returns are now applicable to all distances, the cheap ticket arrangements now in force follow closely on pre-war lines. Although I cannot recollect seeing an "admission" that these pre-war "cheaps" had increased receipts, the com-

panies were presumably satisfied with the results, but as regards the post-war period, the view recently expressed on behalf of the British Transport Commission to the Charges Consultative Committee was that "cheap fares could not improve revenue."

In his second paragraph, Mr. Roberts asks us to believe that the railways applied to the Tribunal for increased fares and rates when (according to him) they should have asked for decreases, on account of the mentality of the accountants in the administrations and the Rates Tribunal. As I have previously stated, accountants, whether short-sighted or otherwise, have no part in the fixing of fares and rates; composition of the Rates Tribunal has always been: an experienced lawyer as Chairman, one business man well versed in transport matters, and one railway expert. The late Mr. John Quirey was the only accountant who ever served on the Tribunal; the other railway members—such names as N. A. Jepson, John Pike, T. E. Argile, and A. E. Sewell come to mind—were all experts in rates and charges.

Mr. Roberts wants an explanation of the "enormous and ever-growing increase in excursionists"; he has only to refer to my article in your February 24 issue. This shows that only a comparatively small part of this increase is "new" traffic, the bulk being transfers from "ordinary" and "monthly return"; the increase in "excursion" receipts is considerably less than the decrease in "ordinary" and "monthly return" receipts. Mr. Roberts is in error again in assuming that there is heavy additional expense in running unnecessary excursion trains, as, although there are some excursion trains run, many of the so-called "excursions" are really cheap-day, half-day, and evening trips available both ways by specified ordinary trains involving no additional expense. So far from the ordinary trains earning next to nothing, in 1949 they earned the greater part of the passenger receipts, amounting to some £114,000,000, to say nothing of a large proportion of the £22,000,000 for parcels, and so on, and £7,000,000 for mails and parcels post.

I am in partial agreement with Mr. Roberts on one point, in that I consider it would be preferable to have one fare only (apart from early morning "cheaps" for workmen) for "ordinary" trains, following the principle embodied in the interim charges scheme for the London area, instead of standard fare paid by only about 10 per cent. of the passengers, *plus* a multitude of "cheap" fares for similar services, differing according to time of train by which available. This "ordinary" fare would be considerably less than the existing standard of 2·44d. a mile, but considerably more than those suggested by Mr. Roberts. For "express" trains the greater speed and comfort provided justify higher charges.

Mr. Roberts asks why the railways continued reducing rates and fares to recover the competitive traffic from the roads. The answer is that they did not reduce rates and fares generally, but introduced cheap tickets and exceptional rates between specified points where they considered this would result in attracting new traffic or returning traffic threatened by road competition. The new policy of "integration" in place of competition renders this form of fare and rate cutting unnecessary.

Mr. Roberts's final statement about "losing a large part of £110,000,000 of competitive traffic in the London area only" is incomprehensible. Is he so ignorant of conditions in this country that he is unaware the Commission has a natural monopoly of public passenger transport in the London area and therefore cannot lose any competitive traffic in that area? Apart from this, the total passenger earning in the London area is only some £74,500,000—see page 615, June 2 issue. Mr. Roberts should think again.

Yours faithfully

J. H. LAUNDY

Rustington, Sussex

## Publications Received

*The L.M.R. Locomotive Reference Book.* Compiled by H. R. Christian and R. P. Sykes. Published by Christian & Sykes on behalf of the British Locotomotive Society and obtainable from 42, Coombe Road, Handsworth, Birmingham, 20. 7 in. × 5 in. 96 pp. Paper covers. Price 3s.—The fourth edition of this reference book follows a similar layout to previous editions. It gives a classified stock list and the shed allocation of all locomotives of the London Midland Region and former L.M.S.R. locomotives of the Scottish Region, with space for recording individual transfers. A list of motive power depots and sub-sheds, with official codes, is included.

*Gateway to the South.* The Centenary of the Huddersfield & Sheffield Junction Railway (Penistone and Holmfirth). By Stanley Chadwick. Huddersfield: Venturers Press Limited, 38, Byram Arcade, Westgate. 9½ in. × 7 in. 13 pp. Illustrated. Paper covers. Price 1s. 6d.—This booklet has been published to mark the centenary of the opening of the railway from Huddersfield to Penistone on July 1, 1850. Authorised in 1845, as the Huddersfield & Sheffield Junction Railway, the undertaking passed into the hands of the Lancashire & Yorkshire Railway before it was completed. The engineering works were very costly, and included four viaducts, six tunnels, and several extensive earthworks. The two longest viaducts, at Lockwood and Denby Dale, are illustrated by reproductions of striking photographs, which give an excellent impression of the length and height of these remarkable structures.

*The Lighted Flame.* A History of the Associated Society of Locomotive Engineers & Firemen. By Norman McKillop. London: Thomas Nelson & Sons Limited, 3, Henrietta Street, W.C.2. 8¾ in. × 6 in. × 1 in. 402 pp. Price 12s. 6d. net.—Fundamentally, the organisation of labour has taken divergent courses, one in the direction of craft trade unionism, the other of industrial trade unionism. In the sphere of transport, industrial trade union organisation has occupied a prominent place, probably because of the employment of large numbers of persons that are not specifically craftsmen. The outstanding exception has been the A.S.L.E.F., which, since its formation in 1880, has been a leading proponent of craft unionism, and has resisted all invitations to become involved in an industrial organisation. This story of the rise and struggles of the A.S.L.E.F. has been prepared under the official auspices of the executive committee of the union, and the author (a Scot who began his railway career with the old North British Railway) has handled the task almost as a sacred duty. He has prepared a most readable story, and, to assist continuity of narrative, has relegated to appendices various items of record. Some of these, such as the rates of wages in 1904, and the numbers of drivers then employed, are of great interest. Wisely, the author has not attempted to prepare a dispassionate record. He is avowedly a partisan of locomotive drivers and firemen and of the craft union, and his story is the more vivid for having been told with enthusiasm. This volume, which is well produced, is likely to remain for a long time a standard work on its subject.

*Conference on Foundry Steel Melting.* London: British Iron & Steel Research Association, 11, Park Lane, W.1. Price 10s.—The Steel Castings Division of the British Iron & Steel Research Association held its fourth conference, covering foundry steel melting at Leamington, in September last, under the Chairmanship of Mr. Richard Lamb, of Hadfields Limited. Papers read covered the cupola/converter, the electric arc, and other processes, besides general subjects such as productivity. The paper by Mr. F. A. Martin dealing with steel foundry productivity was given shortly after his return from the U.S.A. as leader of the productivity team. This publication is a summary of the proceedings of the conference.

# THE SCRAP HEAP

### Meeting Her Match

". . . recalls that most magnificent cry of the local engine driver when warned of the approach on the same line of the Dublin express: "Let her come. She'll meet her match."—*Honor Tracy in "The Sunday Times."*

### Change Here

A 15-year-old orphan boy who supplemented his income by filing halfpennies, was remanded for a week at Chelsea Juvenile Court. The boy put the coins in Underground ticket machines—and got change for 1s.—*From the "Evening Standard."*

### On the Up Line

Under this heading the *Daily Mail* of July 5 printed a letter from a frequent correspondent of ours, Mr. E. R. B. Roberts, of St. Neots, which read:—

> "In the U.S. average rail rates have been gradually reduced to one cent a ton a mile, while British rates have been raised to the equivelent of about five cents."

Mr. Roberts has overlooked the editorial in our October 21 issue on the increases in U.S.A. railway freight rates since June, 1946. The average rate of increase is about 57 per cent. The average revenue per ton-mile was less than 1 cent from 1933 to 1946, but rose to 1·076 cents in 1947, to 1·250 cents in 1948 and was probably still higher in 1949, though we have not seen an official estimate. Small as the additional revenue per ton-mile may appear, it represented in 1948 an increase in total freight revenue of $935 million over 1947, when the volume of traffic was greater.

### Recruiting Incentive?

Extract from a recent staff circular on London Midland Region (Euston House):—

". . . Will you please note that the Royal Air Force Volunteer Reserve and the Royal Auxiliary Air Force shown under Section (iii) of the Appendix are intended to embrace the Women's Units . . ."

### Hitch Hike

A soldier summoned at Leamington for travelling on the railway without paying said:—

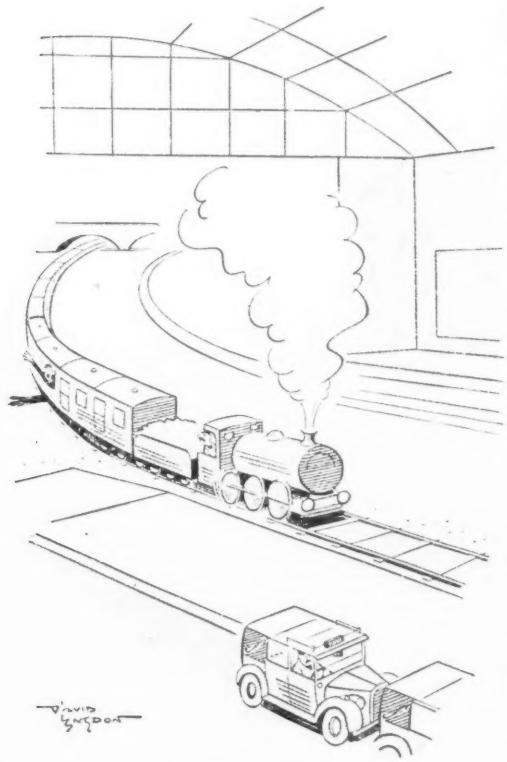
"I have hitch-hiked on nationalised lorries and I cannot see any difference. Soldiers travel free through the kindness of ticket collectors. The Army encourage this mode of travel."

He was fined £2.—*From "The Daily Graphic."*

### Discourtesy

A station porter who insisted on being paid 5s. instead of 4s. for carrying five pieces of luggage on his barrow upset a retired U.S.A. textile manufacturer who is paying a holiday visit to England with his wife after 45 years in America.

"I had five pieces of luggage when I arrived at St. Pancras on my way to Yorkshire," reported this visitor, "and the porter put them all on his barrow and moved them about 200 yards to the train. It took him about three minutes for the entire job, and I offered him a tip of 4s. The porter told me this was not enough and said I should pay 5s., 1s. for each piece of luggage. I was disgusted, but I paid."—*From the "South Wales Echo & Express."*



*"Taxi!"*

*[Reproduced by permission of the proprietors of "Punch"*

### Channel Tunnel

The Channel Tunnel Company reports a net loss of £200. The company was formed in 1872 with the object of drilling a tunnel from Dover to France.

At the office of the company a spokesman said: "At present there is nothing doing in relation to a Channel tunnel."—*From "The Star."*

### The Floral Way

Stationmasters on the Liverpool Southport line like their domains to be spick and span. With some of the older stations this is a difficult job anyway. The structure gives them little assistance, and the paint does not come round too often.

At other stations, however, there are some pleasant touches, now very noticeable, in the horticultural line. To look through a carriage window at rambler roses up the station wall or flower beds on the platform is far better than to be "hit" by some great poster or other.

More strength to British Railways for their efforts in encouraging the floral look on their stations.—*From the "Liverpool Daily Post."*

### Tribute

Earl Mountbatten of Burma has sent the following letter of appreciation to Sir Eustace Missenden, Chairman of the Railway Executive:—

> "I have not travelled by rail in the United Kingdom since 1943, and I thought that my reactions to my first trip after seven years might be of interest.
>
> "My wife and I went to Leeds by the 1.0 p.m. train on May 18, returning by the 5.15 p.m. train on May 19. The trains left and arrived with exact punctuality; the carriages were clean and comfortable; the friendliness and courtesy of all railway officials from stationmasters downwards was exemplary.
>
> "We had lunch in the train going up, and dinner in the train coming back. The menu was more varied and interesting than I can remember it being before the war, and the food was certainly as good, if not better . . . In fact travelling by train in Britain came as a very agreeable surprise after all these years.
>
> MOUNTBATTEN OF BURMA"

### Empties

*(More than 250,000 bottles salvaged from trains and platforms are to be sold by the L.M.R.)*

Some passengers when travelling
Use bottles with great care,
But many are most thoughtless
And throw them anywhere.

It's good for public safety,
When bottles are around,
To gather up the "empties"
Wherever they are found.

We're glad that empty bottles
Are salvaged from the trains,
And those from station platforms
Are not thrown on the "Mains."

So leave it to the Regions,
To salvage all they can,
As they cater for the needs
Of parched and thirsty man.

W. E. N.

# OVERSEAS RAILWAY AFFAIRS

*(From our correspondents)*

## SOUTH AFRICA

### Traffic for Northern Territories

For some time difficulties have been experienced in making adequate provision for traffic to Rhodesia and the other northern territories, because of the restricted capacity of the line north of Mafeking. The situation deteriorated further during 1949 when greater use was made of Union ports for the import of goods into Rhodesia because of delays to shipping in Beira Harbour; and this diversion of traffic to the South African Railways heavily overloaded the Mafeking-Bulawayo section, which is operated with Rhodesia Railways rolling stock. Eventually, traffic accumulated to such an extent that the South African Railways were obliged to lend locomotives and guards vans to the Rhodesia Railways to enable them to clear the congestion. By means of this assistance a record volume of goods was moved over the section, and not only had the arrears been cleared by the end of the year, but it was also found possible at that stage to convey all the traffic offering for the northern territories without any delay.

## INDIA

### Landslips in Northern Bengal

The abnormally severe break of the south-west monsoon in Northern Bengal has been responsible for extensive landslides on the Darjeeling Himalayan Railway between Kurseong and Darjeeling. The damage is reported to be so heavy that resumption of traffic is not likely in under two or three months. Darjeeling is cut off from Calcutta except by air and by the old military road.

The new Assam Rail Link is also seriously damaged and through running from the Calcutta direction is possible only as far as Siliguri. Reports suggest that several bridges have been damaged as well as the earthworks.

## TASMANIA

### Proposed New Road Services

The Transport Commission is expected shortly to seek authority from Parliament to initiate new road passenger and goods services in the north. The proposed services will be between Launceston, Deloraine, and Mole Creek, and between Launceston, Scottsdale, Derby, and Herrick.

The Administrator of Road Transport stated that the Launceston-Herrick service had been approved by the Parliamentary Select Committee on Transport. The Launceston-Deloraine-Mole Creek service was proposed to replace the present uneconomic railway service between these places.

## ARGENTINA

### National Railway Directorate

Members of the recently-created National Railway Directorate, under the presidency of Colonel J. R. Zubieta, were formally placed in office by the Minister of Transport on June 6.

### Station Becomes Bus Terminal

As from June 4, the Mar del Plata south terminus of the General Roca Railway has been renamed Presidente Perón, and has become a bus terminal for the Atlantic Road Transport Group of the Ministry of Transport, following the example of the Santa Fé Railway terminal in Rosario. Before the next summer season opens it will be equipped to handle all bus traffic operating under national and provincial concessions.

### Ruling on Co-ordination of Transport

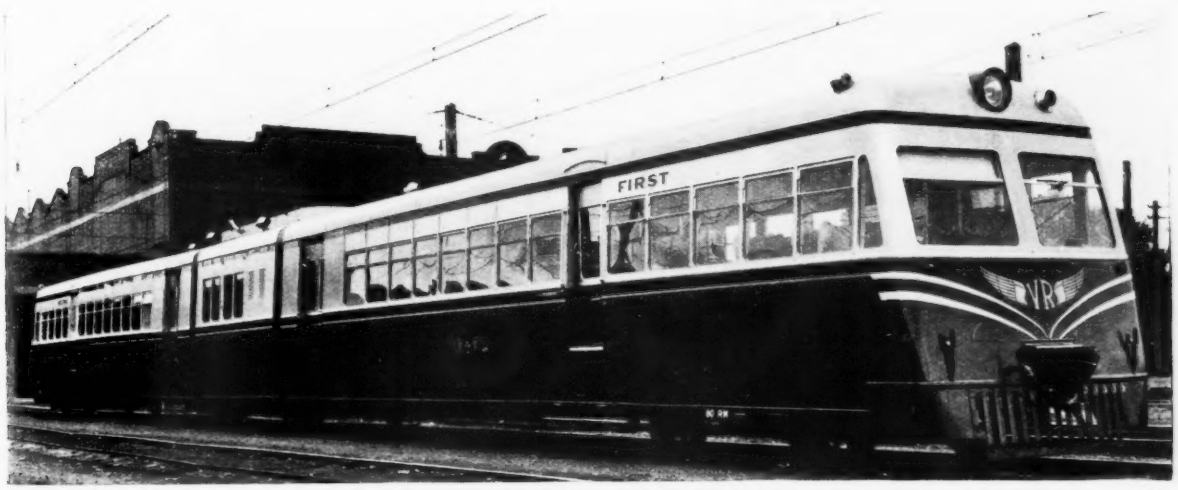
A recent Government decree established that all public commercial road transport, whether passenger or goods, carried out by one vehicle and linking the Federal Capital or a national territory with a province, or two provinces, or two points in a national territory outside the limits of a single municipality, is under national jurisdiction and subject to the control of the Ministry of Transport. This brings the owner-driver under the same control as the road transport companies, and if the decree, which provides for strict investigation into routes, charges and fares, is rigidly enforced, it will be the greatest step taken so far towards true road-rail transport co-ordination since the matter first received consideration years ago.

## UNITED STATES

### Strike of Switchmen

Members of the Switchmen's Union on five western and mid-western railways struck at the end of June in the course of a dispute relating to a 40-hr. week and other improved conditions. On July 7, after being threatened with immediate action by President Truman if the strike was not called off, they returned to work on four of the railways, with the exception, that is, of the Chicago Rock Island & Pacific. The next day strikers returned to duty on the Rock Island system on instruction from their union president, after the army had taken over the railway on an order from President Truman and a

## Railcar for Main-Line Services in Victoria




*One of a fleet of six 280-h.p. diesel railcars intended for main-line work in Victoria. The coaches are being constructed in Melbourne and the power bogies in England by Walker Bros. (Wigan) Ltd.*

Federal judge had issued a temporary order requiring them to go back to work at once.

### Union Station at Akron

A new union passenger station was opened at Akron, Ohio, built by the two railways jointly using it, the Baltimore & Ohio and the Pennsylvania. It embodies a reversible moving staircase connecting the overhead concourse at street level, with the platforms 22 ft. below; palatial waiting and rest rooms with upholstered lounge chairs and settees; a concourse 197 ft. long and 28 ft. wide spanning the tracks and platforms; and steam radiant heating throughout the buildings—including the concourse—involving use of 10,000 ft. of piping. A bay at each end accommodates sleeping cars placed for passengers to entrain and alight at convenient hours.

## GERMANY

### New Station Building at Freiburg

A new semi-permanent station building has been constructed at Freiburg-im-Breisgau, the university town in Baden. The original building, dating from 1845, was destroyed in November, 1944, and the tracks were badly damaged. The service was resumed on August 1, 1945, a hundred years to the day after the opening of the first station. The restoration of the station building had to await the currency reform and could not be completed before November, 1949, when it was opened in the presence of the President of Baden, and the German and French authorities.

Although the building, which is designed by Herr Walter Lay of the Federal Railways, is an outspoken utility building, it is not only fully adequate for the purpose, but also satisfactory architecturally. The ticket hall is larger than that of the old building, and the main circulating area covers an area of 5,600 sq. ft. Five ticket counters and six barriers are provided. There are spacious waiting rooms and restaurant facilities. The waiting rooms are divided for smokers and non-smokers without class distinction. A reminder of the past is a small clock tower similar to that which used to be a landmark of the old station. The building was erected at the low cost of DM. 300,000 (about £24,000).

## SWITZERLAND

### Berne-Neuchâtel Railway in 1949

The 33½-mile standard-gauge single line between Berne and Neuchâtel is owned by the Berne-Neuchâtel Railway Company, but worked by the Berne-Lötschberg-Simplon Railway Company to whose group the Berne-Neuchâtel belongs.

The line was opened to traffic in 1901. Its Berne suburban section was electrified in 1923, and the remainder of the line in 1928. The line is a short cut in the direct connection between Berne and Paris *via* Les Verrières, Pontarlier and Dijon. There is a daily fast train each way between Berne and Paris over this route. Traffic on the Berne-Neuchâtel line receded in 1949; 2,420,000 passengers were carried, compared with 2,480,000 in 1948, and the goods traffic dropped to 229,300 *tonnes* from 256,400 *tonnes*. The working receipts were lower at fr. 4,083,400 (fr. 4,160,100) but the working expenditure increased to fr. 4,128,300 (fr. 4,051,800) and a loss of fr. 44,891 contrasting with a surplus of fr. 108,381 in 1948, resulted. The profit and loss account closed with a loss for the year of fr. 414,760 (fr. 447,241). In 1948 it was possible to cover the loss by drawing on the reserve fund earmarked for signalling installations, the balance of that fund, at fr. 32,758 sufficed to cover only a fraction of the loss incurred in 1949. To make up the difference fr. 243,499 was drawn from the financial reconstruction reserve fund and fr. 138,502 from general reserve, leaving only fr. 5,497 in reserve.

### Receipts of Principal Stations

The table below illustrates the traffic receipts of the principal stations of the Federal Railways in 1948 and 1949.

| Passenger receipts | Million Swiss fr. 1948 | 1949 |
|---|---|---|
| Zurich Main ... ... ... | 35·4 | 35·4 |
| Berne Main ... ... ... | 15·8 | 16·1 |
| Basle Federal ... ... | 16·2 | 16·0 |
| Lausanne ... ... ... | 12·2 | 11·7 |
| Geneva Cornavin* ... ... | 11·3 | 10·6 |
| Lucerne ... ... ... | 7·7 | 7·7 |
| Winterthur ... ... ... | 5·7 | 5·6 |
| Bienne ... ... ... | 5·0 | 5·0 |
| St. Gall ... ... ... | 4·8 | 4·7 |
| Olten ... ... ... ... | 3·2 | 3·2 |

* Including receipts from French National Railways traffic.

Although Berne preceded Basle in 1949, the regularity, not only in order of importance, but also in the totals for both years, will be noted.

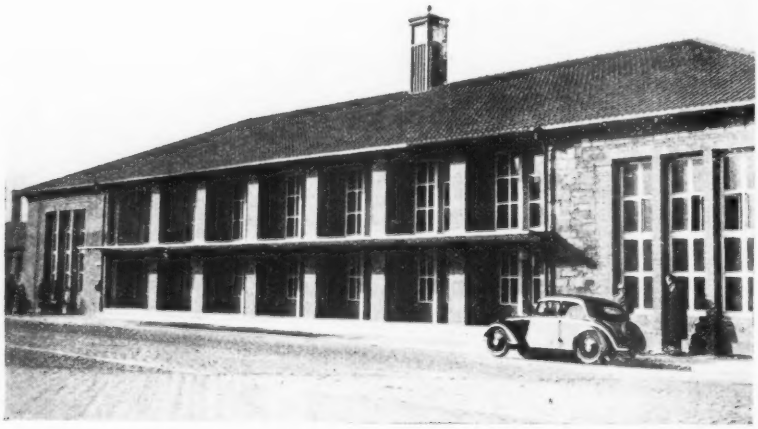
## AUSTRIA

### New Electric Locomotives

The first of ten new post-war electric locomotives for the Austrian Federal Railways was delivered recently. The need for new electric locomotives is urgent; some trains have still to be hauled by steam engines over electrified lines. The new series of electric locomotives embodies all-welded bogies and frame, restricting total weight to 80 tons; the mechanical parts were supplied by the Wiener Lokomotivfabrik and electrical parts by Elin A.G.

### Reconstruction of a Danube Bridge

In 1945, the bridge of the Nord-Westbahn section of the Federal Railways over the Danube in Vienna was the first of the five railway bridges over the Danube to be temporarily reconstructed for single-line traffic. Two other bridges over the Danube have since been permanently reconstructed. In the autumn of 1949, it was decided to reconstruct the Nord-Westbahn bridge in Vienna, as the provisional bridge showed signs of deterioration. A new Roth-Waagner standard-steel bridge 540 ft. long was used to bridge two of the spans. Work included the transverse movement of some old structures dating back to 1907.



*Exterior of new station at Freiburg-im-Breisgau (see paragraph above)*

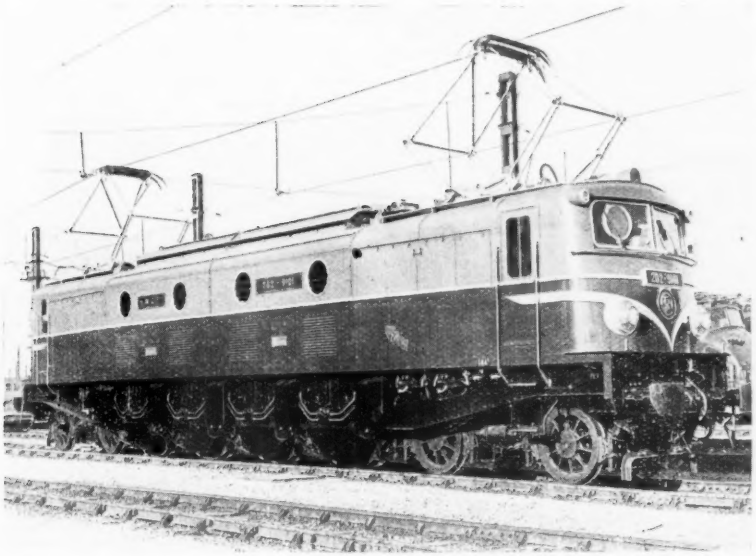
## SWEDEN

### Land Cruises

A special land-cruise train has been introduced. The 48 passengers live in the train for eight days and tour the country. The train consists of baggage van, first and second class sleeping cars, restaurant car, saloon car with bar, and observation car in rear, equipped with library, writing room, ironing room, shower bath, and photographic dark room. The train crew are linguists, and specially trained. The library contains literature in English on Sweden, and travel films with English sub-titles are shown in the saloon. The tour begins at Stockholm and passes *via* Upsala and Dalecarlia to the iron-ore and waterfall country in the far north, and across the Arctic Circle to Narvik, in Norway.

# Improved 2-Do-2 Locomotives for S.N.C.F.

*First of a new series with modernised motors and control system now running on Laroche-Dijon section*



*Prototype 2–Do–2 locomotive for express passenger and freight service on South-Eastern Region main line*

THE first of the new series of 2-Do-2 1,500-V. d.c. electric locomotives for fast passenger and freight traffic on the Paris-Lyons line was delivered recently to the French National Railways, and is now undergoing trials on the Laroche-Dijon electrified section. This is the first of a batch of 35 locomotives (9101-9135) now under construction in France. Eventually nearly a hundred machines of the 2-Do-2 type will be required for working the Paris-Lyons line when electrification is completed.

The new locomotive is an improvement on existing 2-Do-2 classes used on the Western and South-Western regions of the S.N.C.F. Some of its novel features were referred to in *The Railway Gazette* of July, 15, 1949. The all-steel underframe and body are carried on a four-axle fixed driving wheelbase and two four-wheel guiding bogies. Total weight in running order is 144 *tonnes* and adhesive weight 82 *tonnes*. Ballast may be added to bring the total weight up to 150 *tonnes*, giving an adhesive weight of 92 *tonnes* (23 *tonnes* per driving axle), and allowing the continuous rating of 4,400 h.p. at 1,350V. to be used. The 1-hr. rating is 4,880 h.p. A train of 900 *tonnes* can be hauled on the level at a speed of 86 m.p.h.; and one of 1,000 tons up a gradient of 1 in 200 at 60 m.p.h.

The main underframe members are of welded steel, instead of being cast, to eliminate certain types of fracture; and are connected by riveted cross-members. Two short members on the outside carry the large gearwheels for driving the axles. The four traction motors are mounted rigidly on the frame. Their pinions engage with the large gearwheels, which in turn are coupled to the driving axles through flexible transmissions of the Buchli link type, permitting vertical or lateral movement of the driving axles relative to the underframe.

### Arrangement of Body

The body is made of steel sheet, riveted, bolted or welded, according to circumstances. There is a driving cab at each end, and intermediate compartments housing the traction motors, auxiliary machines, and electrical equipment. The cabs are connected by two corridors giving access to the apparatus installed in the separate sections, each being protected by bolted doors with Plexiglass glazing.

The axleboxes of the guiding bogies are fitted with S.K.F. roller bearings. Each bogie frame is of steel, with a welded bolster, and is supported on the axleboxes by a laminated spring in conjunction with two spiral springs.

The four 1,500-V. traction motors are a six-pole type with commutating poles and a compensating winding. A high-speed circuit-breaker protects the 1,500-V. circuits. The resistance and motor combination contactors are actuated by camshafts driven by

(*Continued on page* 40)

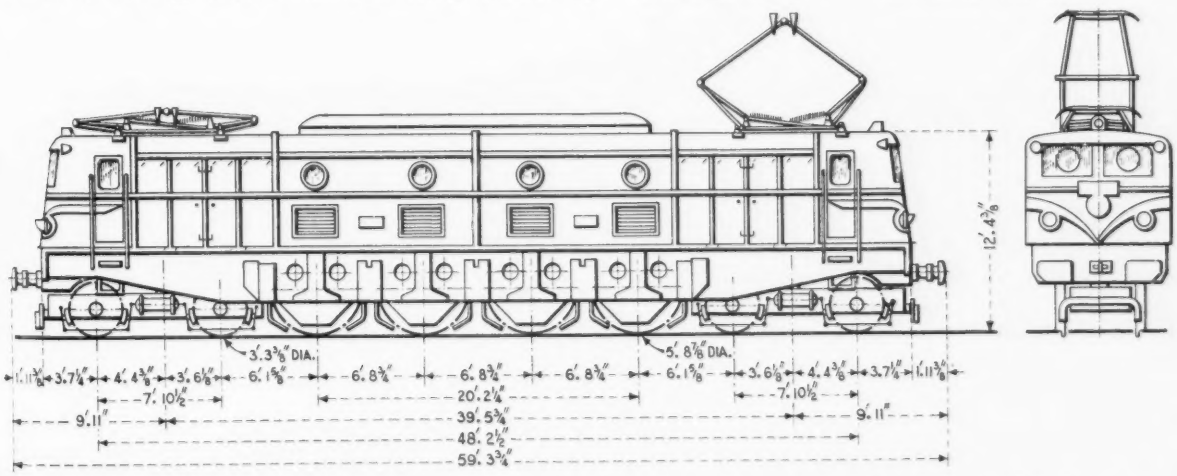
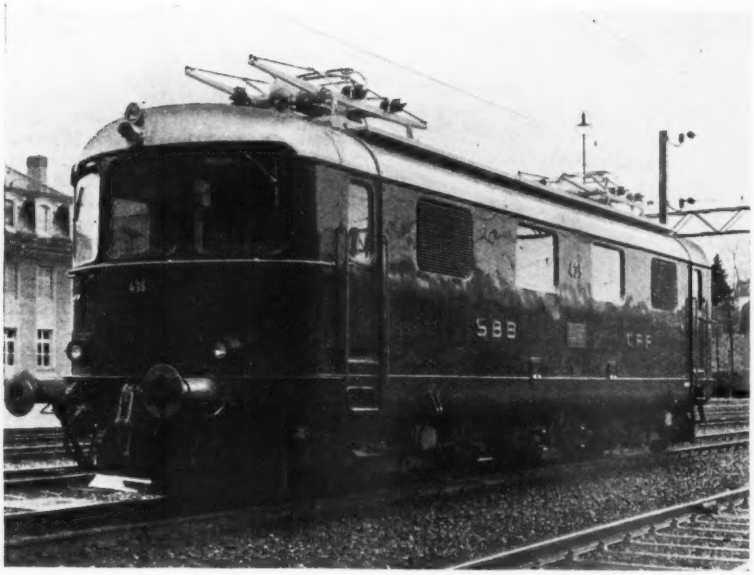



*Diagram showing principal dimensions of 2–Do–2 locomotive for Paris-Lyons line, French National Railways*

# More Swiss Lightweight Electric Locomotives

*New "Re 4/4" series embodies changes in weight and power rating that will reduce double-heading*



*Lightweight express locomotive of the third "Re 4/4" series now being delivered to the Swiss Federal Railways*

BETWEEN 1946 and the end of 1948, the Swiss Federal Railways placed in service 26 lightweight Bo-Bo electric locomotives of the "Re 4/4" class. These were delivered in two series, and were described in our November 8, 1946, issue. A third series, comprising 24 locomotives (Nos. 427-450), now in course of delivery, embodies certain minor modifications adopted as a result of experience with the previous machines.

In the new series the wheelbase of 35 ft. 5 in. is retained, but the length over buffers is 48 ft. 10½ in. as compared with 48 ft. 2½ in. in the older type. The elliptical end walls of the cab are now continuous, and have three large windows. In the earlier locomotives the end walls were interrupted by a central door, with a folding footplate by means of which there was access to the adjoining coaches if the locomotive was marshalled in the middle of a train, as was done on certain push-pull services.

Passengers could pass through the locomotive by means of the end doors and a side corridor on their way from one part of the train to the other in order to reach the restaurant or buffet car. No provision is made for this in the new series of locomotives, and the cab end walls now present a more pleasing appearance, similar to that of the Lötschberg Railway Bo-Bo class locomotive illustrated in our August 17, 1945, issue.

Access to the cab for the driver is still given by means of side doors, and this differs from the Lötschberg locomotives, where the cab doors are in the ends of the body but to the side. In the new "Re 4/4" locomotives, the partition separating the side corridor from the electrical equipment is done away with, resulting in better ventilation. The earlier machines had four windows in each side wall and cooling air was drawn in through four sets of louvres beneath the windows. In the new locomotives only the two central windows in each side have been retained, and the outer windows have been replaced by ventilation louvres.

The adhesive weight has been increased by two *tonnes* from 56·4 *tonnes* to 58·4 *tonnes*. This enables the locomotive to haul lightweight trains weighing up to 450 *tonnes*, as compared with the maximum of 350 *tonnes* allowed for the older locomotives. This increased haulage capacity has become necessary because the density of service on certain main lines makes it almost impossible to run additional trains. Moreover, the heavier class can do without a pilot locomotive on certain sections with severe gradients, such as on the climb between Lausanne and Palézieux, on the main line to Berne, where for 13 miles the ruling gradient is 1 in 55.

The one-hour rating of the new locomotives has been increased from 2,240 h.p. to about 2,500 h.p., and the maximum speed is 77½ m.p.h.

Regenerative braking, now considered to justify itself only on mountain lines, has been dispensed with on the new locomotives. The transformer windings differ from those of the older series in that they are entirely of copper; and the layout of the electrical equipment and wiring has been modified to some extent. Conforming with the practice adopted in the second series of locomotives, the driver in the third series is seated while at work.

## Improved 2-Do-2 Locomotives for S.N.C.F.

(*Concluded from page* 39)

electro-pneumatic or electric servo-motors. Auxiliary machines comprise two compressors with an output of 70 cu. ft. per minute; four motor-blowers for cooling the traction motors, each with an output of 5,300 cu. ft. per min.; and two motor-blowers for cooling starting resistances, each with an output of 18,000 cu. ft. per min.

The controller in each driving compartment is arranged for remote control of the electro-pneumatic servo-motors driving the camshafts. These camshaft and contactor groups are located in four compartments behind the driving cabs. The central section of the body houses the traction motors and the motor-blower sets for traction motor and resistance cooling.

Considerable economy in low-tension wiring has been achieved by the use of a differential type of controller mechanism, some features of which were described in *The Railway Gazette* of May 21, 1948. In this system the servo-motor is started by a movement of the main controller handle, and cuts off its own power supply mechanically by a cam action when it has rotated the camshaft through an angle corresponding to that through which the controller shaft has been revolved by the driver.

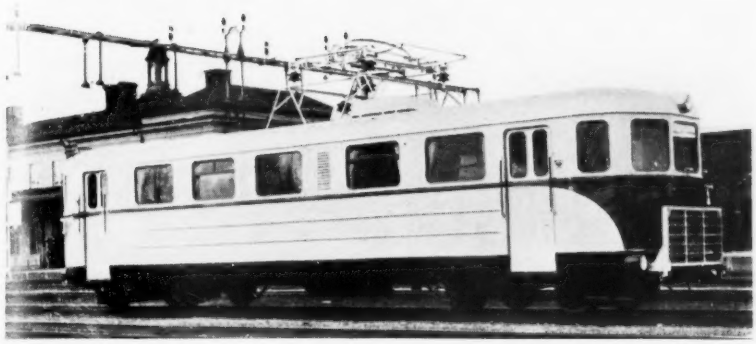
A high degree of operating flexibility has been obtained by the use of series, series-parallel, and parallel motor combinations, with 7 weak-field steps, so that 24 economical running speeds are available. Minimum field is 29·5 per cent. of the full value, this degree of reduction being made practicable by the use of compensated motors.

Principal dimensions and other characteristics of the locomotive are:—

| | |
|---|---|
| Length over buffers ... ... | 59 ft. 3 in. |
| Total wheelbase ... ... | 48 ft. 2 in. |
| Driving wheelbase ... ... | 20 ft. 3 in. |
| Bogie wheelbase ... ... | 7 ft. 10½ in. |
| Driving wheel dia. ... ... | 5 ft. 9 in. |
| Bogie wheel dia. ... ... | 3 ft. 3½ in. |
| Weight in running order (without ballast) ... ... | 144 *tonnes* |
| Weight in running order (with ballast) ... ... | 150 *tonnes* |
| Maximum speed ... ... | 87 m.p.h. |
| Continuous rating at 1,350 V. | 4,400 h.p. |
| 1 hr. rating at 1,350 V. ... | 4,880 h.p. |

# Light Electric Railcars in Sweden

*Adaptation of former diesel unit by installation of compact motor and transformer equipment*



*New electric railcar on trial run at Falun Station*

IT has been the practice in Sweden until recently to use diesel railcars for passenger services on electrified branch lines where the traffic is light, although through goods trains are worked by electric locomotives. The problem has been to accommodate high-voltage a.c. traction equipment in small vehicles, but recent developments in the design of efficient motors, sufficiently compact for mounting in the bogies, has changed the situation compared with conditions when the diesels were introduced. The transformer must still be carried in the coach body, which imposes insulation problems in connection with H.T. circuits close to passenger accommodation, to say nothing of encroaching on the space available for seating. Here, too, engineering progress has overcome some of the difficulties associated with light electric railcars on high-voltage lines.

### Method of Conversion

As was mentioned briefly in our December 2, 1949, issue, a compact transformer and motor equipment developed by the ASEA company in Sweden has enabled an existing diesel railcar to be converted for electric working without serious mechanical alterations.

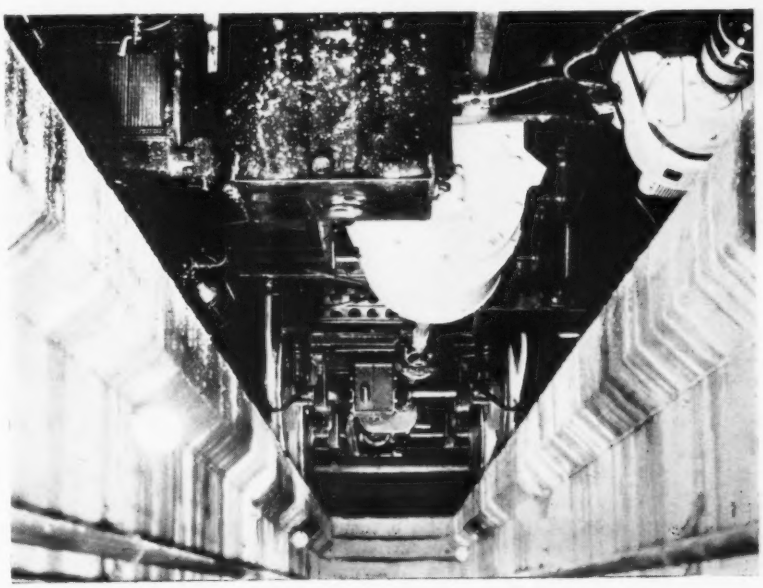
The single-phase series traction motor is rated at 170 h.p., and is mounted longitudinally under the coach in such a manner as to drive the power bogie through the existing propeller shaft and axle gearing, but omitting the clutch and gearbox used with the former diesel engine. An auxiliary self-starting induction motor for driving the air-compressor and battery-charging generator is mounted below the frame close to the traction motor.

The 100kVA. oil-cooled transformer is provided with an on-load tap-changer on the low-voltage side, with five tappings. During acceleration the connection to each higher voltage tap is made *via* a resistor before the connection to the lower tap is broken, after which the resistor is short-circuited. The controller, which is fitted with a dead man's handle, therefore provides five running positions. A high-tension fuse with a rupturing capacity of 200 kVA. is inserted between the transformer and the 16,000 V. line.

The pantograph is raised by hand-operated gear through a spring-tensioned steel cable, and all the pantograph joints are equipped with ball bearings. The collector itself is supported on vertical springs.

The equipment is light, the total weight being 3½ tons, but is of sufficient capacity for hauling a trailer of similar size to the railcar. A controller may be fitted in the trailer for remote operation of the railcar equipment. When operating independently, the rate of acceleration of the railcar is 1·6 m.p.h. per sec., and the normal running speed is 55 m.p.h. Total weight of the railcar, including electrical equipment, is 16 tons. The payload with passengers and luggage is 8 tons, and there is accommodation for 48 seated and 45 standing passengers.

In the power bogie the driving wheels rotate on hollow shafts, the transmission shaft passing through to the outside of the wheels and being connected to the hubs through friction discs. This arrangement enables the transmission shaft to be uncoupled readily from the outside if required. The wheel diameter is 2 ft. 4 in., and the bogie wheelbase 6 ft. 7 in.

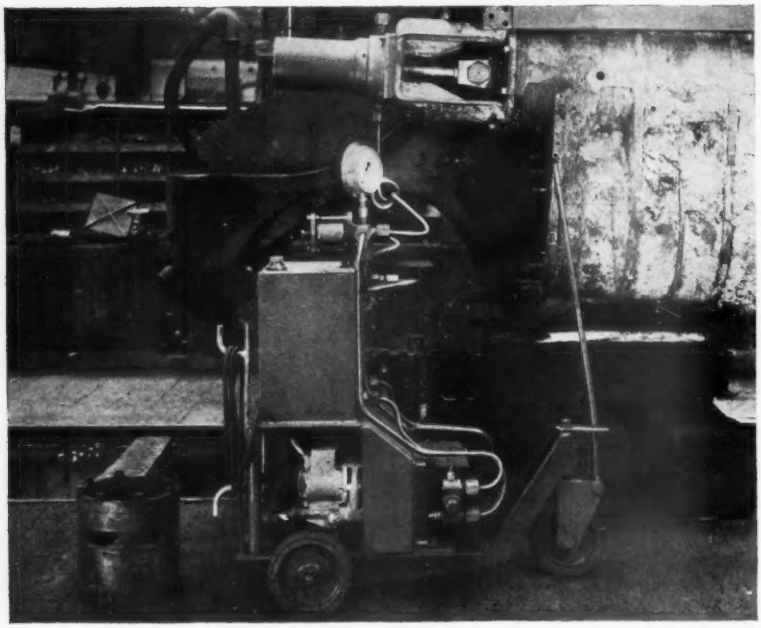


*Underside view, showing main motor with cardan drive to rear bogie and, on right, auxiliary motor driving compressor and battery-charging generator*

FURTHER ELECTRIFICATION IN AUSTRIA.—Electric traction was inaugurated on the Spittal-Villach section on May 17 in the presence of representatives of the Government and other authorities.

# Repairs to Locomotives at Eastleigh, Southern Region

*An account of the reorganisation made necessary by the re-grouping of three railway systems*



*Hydraulic liner extractor, designed at Eastleigh, capacity 3 tons per sq. in.*

WITH the grouping of the three separate railway systems, the L.S.W.R., the S.E.C.R., and the L.B.S.C.R., in 1923 the locomotive repair works at Brighton, which were then responsible for repairing the L.B.S.C.R. locomotives, were subsequently closed and the locomotives of all three systems concentrated at Eastleigh and Ashford. In consequence, this arrangement entailed a much heavier output from the Eastleigh Works, and it was necessary to overhaul the entire system and method of locomotive repairs.

### Shopping Procedure

The shopping of locomotives is under the control of the Shopping Bureau, a department of the Mechanical & Electrical Engineer, Brighton, and is arranged according to the actual condition of the locomotive when considered for repairs. For shopping, time periods are specified at which all locomotives in service are reported on proposal forms to the Shopping Bureau by the official in charge of the depot at which the locomotive is working, these forms being routed through the Motive Power Superintendent, Waterloo. The locomotives are shopped for repairs solely on their physical condition, and, should the locomotive be capable of continuing in service, it is re-proposed at a subsequent date.

A detailed account of the repairs carried out to locomotives is prepared by the Eastleigh Works staff and is forwarded to the Shopping Bureau. A duplicate is issued to the Motive Power Superintendent and accompanies the locomotive to all its owning depots, the card containing a complete history of the repairs carried out to the locomotive during its last visit to the workshops. A boiler examination history card is also prepared and forms part of the records maintained by the Shopping Bureau.

The examination of the boiler is carried out three weeks before the locomotive is actually allocated for shop repairs, and the reports are made out in triplicate, one copy being retained in the Shopping Bureau, one going to the Motive Power Superintendent, and one to the boiler inspector. The boiler inspectors are under the control of the Mechanical & Electrical Engineer, Brighton, and the Shopping Bureau is responsible for laying down the periodic programme of boiler inspections, while the Motive Power Superintendent's Department is responsible for the locomotive being available for boiler inspection on a pre-determined date.

Six weeks before expiration of the time period the shopping proposal form is submitted in triplicate by the superintendent of the owning depot direct to the Motive Power Superintendent, Waterloo, who retains one copy, the other two being forwarded to the Shopping Bureau, Brighton, accompanied by previous proposal forms, assuming the locomotive has been previously proposed for repairs but retained in service by virtue of its condition. The form contains the mileage since last repair and a detailed report of the condition of the locomotive, tyre thicknesses, and the dimensions of the major components of the locomotive, such as cylinder and piston valve liner diameters.

### Stage Distribution of Locomotives

On receipt of locomotives for repairs, they are placed on the stripping pit in the erecting shop (Stage One). After the engine has been stripped, the separate details have labels attached indicating to which engine they belong. They are then boshed and transported to examining benches, after which they are sent to the appropriate departments for repairs. The engine frame is then moved to the frame pit (Stage Two) where the frame is examined and the necessary repairs carried out. Horns are rectified, cylinders rebored, and piston valve liners rebored or replaced. Should the piston valve liners require reboring only, this is done in step standard sizes.

After completion of the above repairs, the locomotive frame is then moved to the finishing pit (Stage Three) where the spare boiler, which is already repaired and awaiting allocation to an engine, is fitted to the frame. The smokebox is fitted by the boiler shop and the superheater header and steam pipes are fitted by the smokebox gang attached to the erecting shop. Any boiler mountings removed from the boiler for lifting purposes are replaced by the boiler-mounting gang, which is also attached to the erecting shop.

### Repairs to Engine Components

On the locomotives being broken down into sub-assemblies in the stripping pit, they are forwarded after inspection to the fitting shop, where they are distributed in detail to the appropriate shops for repairs.

The various locomotive parts are, as far as possible, repaired in sets to avoid breaking down machines more than is necessary. The machine shop is divided into four sections—capstan, turning, machine, and the heavy machine section, the last-named being housed in part of Bay No. 4 in the erecting shop to facilitate heavy lifting. This section deals mainly with the locomotive parts such as cylinders, frame-stretchers, and similar types of material.

Locomotive axle boxes are dealt with in the machine shop section adjacent to the white-metal shop, pistons and piston valves and motion being dealt with in the turning section. Cylinders are cast in the foundry at Eastleigh, which has also a continuous casting plant which deals with quantity casting for both carriage and locomotive details.

Repairs to locomotive components are dealt with on time schedules, based on the type of engine under repair. Repair schedule visual indication is used on which movements of materials

are recorded, and a master chart is maintained in the Works Manager's office which indicates locomotives forecasted for repairs and locomotives under repairs in the works. Intermediate repairs are also scheduled on a time basis, and casual repairs necessitated by collision or for other reasons are treated separately.

**Boiler and Tender Repairs**

Electric welding is used extensively in the boiler shop, which is well equipped with manipulators of Eastleigh design and manufacture, and a Phillips X-ray equipment is also installed. Boilers are not necessarily changed on locomotives while in for overhaul; this depends on the condition of the boiler. The repairs are carried out to an extent which will ensure the boiler being capable of remaining in service to coincide with the next engine repair period. Spare boilers are held in stock on an economic basis adequate to meet requirements.

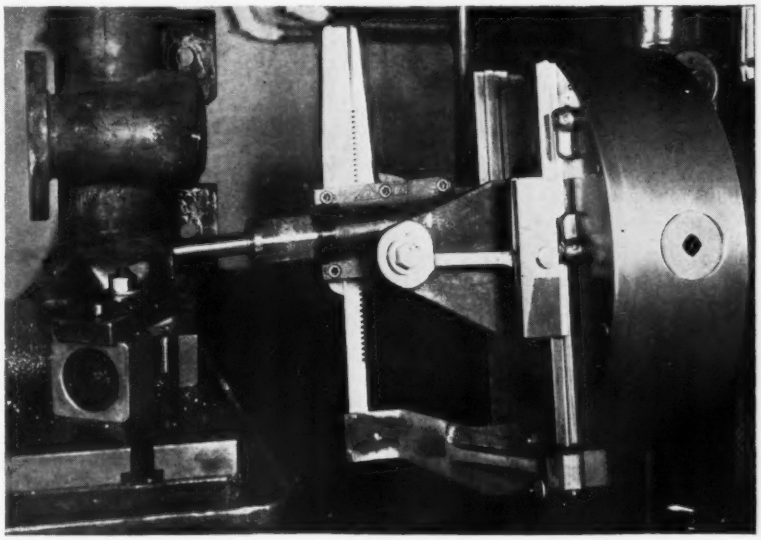
The boiler inspector's report, giving details of the boiler repairs necessary on receipt of the locomotives at Eastleigh, are an indication to the shops as to whether the repairs can be executed during the mechanical repair period. Should this not be possible, a spare boiler is allocated.

Tenders are usually attached, after repairs, to the same engine with which they were received. All plate-work repairs are carried out in No. 1 Bay of the erecting shop, which also houses the plate section of the boiler shop. The bogie repairs are also carried out in this bay and sufficient plant is installed to make this section self-contained and capable of repairing both tender bogies and locomotive bogies and pony trucks.

In the event of wheel re-tyring being necessary, the wheels are sent to the wheel shop; otherwise tyre turning is carried out on a Craven 5-ft. tyre turning lathe. All coupled wheels are dealt with in the wheel shop. On completion of repairs the locomotive is moved to the valve setting rolls, a special gang being responsible for valve setting and steaming. Vacuum equipment is also tested.

In addition to the usual locomotive repairs a certain amount of locomotive building is undertaken at the Eastleigh Works, the programme of work being arranged on similar lines to the repair schedules. Locomotive details received from running depots are also repaired; all such materials are first received by the Stores Department and are replaced by repaired or new items. Components are kept in stores custody and are despatched to the shops for repairs in economical batches to avoid constant changes of set up of machines.

Certain small tools, such as taps, reamers, and milling cutters, are manufactured in the tool room which is adjacent to the machine shop. Tool tipping with tungsten carbide is also extensively used throughout the works.



*Eastleigh design of tooling used in machining taper hole in injector on a horizontal boring machine*

PRODUCTION HANDICAPPED BY SHORTAGE OF PACKING MATERIAL.—Shortage of packaging material is causing concern to manufacturers throughout the country. Many firms are already handicapped in production and it is reported that the position threatens to grow worse. A representative of a paper and board mill said recently that there was a very large unsatisfied demand for packaging to keep pace with increased production in practically every industry. The chief difficulty was shortage of raw material, which was 90 per cent. waste paper. In view of the seriousness of the situation the Waste Paper Recovery Association is appealing to all engaged in industry to see that every scrap of used and unwanted paper is recovered. There should be no problem of disposal today, but the Association will deal with any queries at its headquarters at 52, Mount Street, London, W.1.

ANNUAL CAMP: NO. 19 RAILWAY GROUP, R.E.—No. 19 Railway Group, Royal Engineers (S.R.), spent a fortnight in camp from June 17 to July 1. The units comprising the Group are:—Headquarters; 150 Railway Maintenance Squadron, R.E.; 153 Railway Traffic Squadron, R.E.; 157 Loco Running Squadron, R.E.; 159 Railway Survey Squadron, R.E.; and No. 2 Railway Telegraph Squadron, R.Sigs. The camp was held at the Transportation Centre at Longmoor. The first week was devoted to military training, and ended in an inspection by the Engineer-in-Chief, Major-General A. D. Campbell. The second week was devoted to technical training, and consisted in working the Longmoor Military Railway under military conditions, including derailments and raids by attacking forces and aircraft.

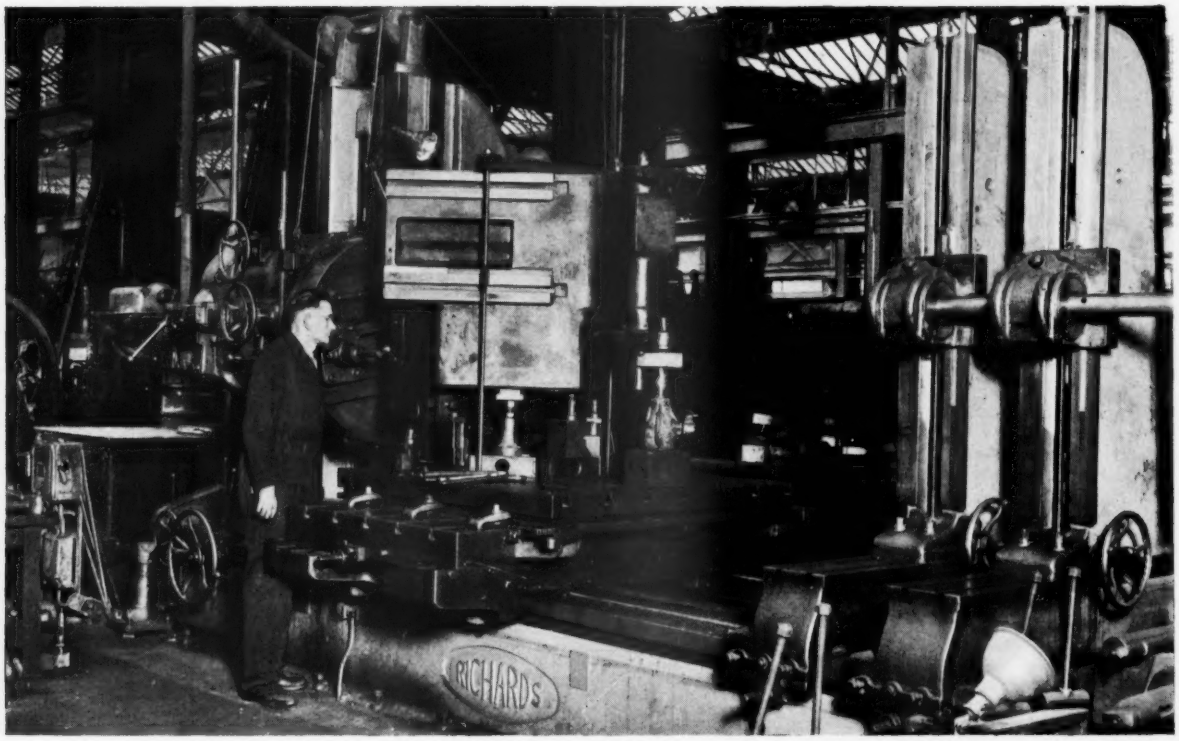
A WORKS OUTING TO AMSTERDAM.—Employees of George Ellison Limited and its associate company, Tufnol Limited, were able to enjoy an unusual form of works outing this year. A party of 52 employees were transported by coach to Elmdon Airport, Birmingham, where they boarded two planes and disembarked 1¾ hr. later at Schipol Airport, Amsterdam. Another party of 52 made a similar trip the next week. Included in the parties were men who had last seen Holland as members of the liberating Allied armies.

REED VIBROMETER AMPLITUDE SCALE.—The General Electric Co. Ltd. has produced an amplitude scale for use with its Reed vibrometer. Many users of this instrument on power station plants, machine tools, transport vehicles, ships, aircraft, and so on, have expressed a wish for a simple scale to enable relative amplitudes to be measured, and the instrument is now supplied with such a scale. Users who purchased the instrument before the scales were supplied will be sent one free of charge on application to M. Department, the General Electric Co. Ltd., Kingsway, London, W.C.2. quoting the serial number of the vibrometer in their possession.

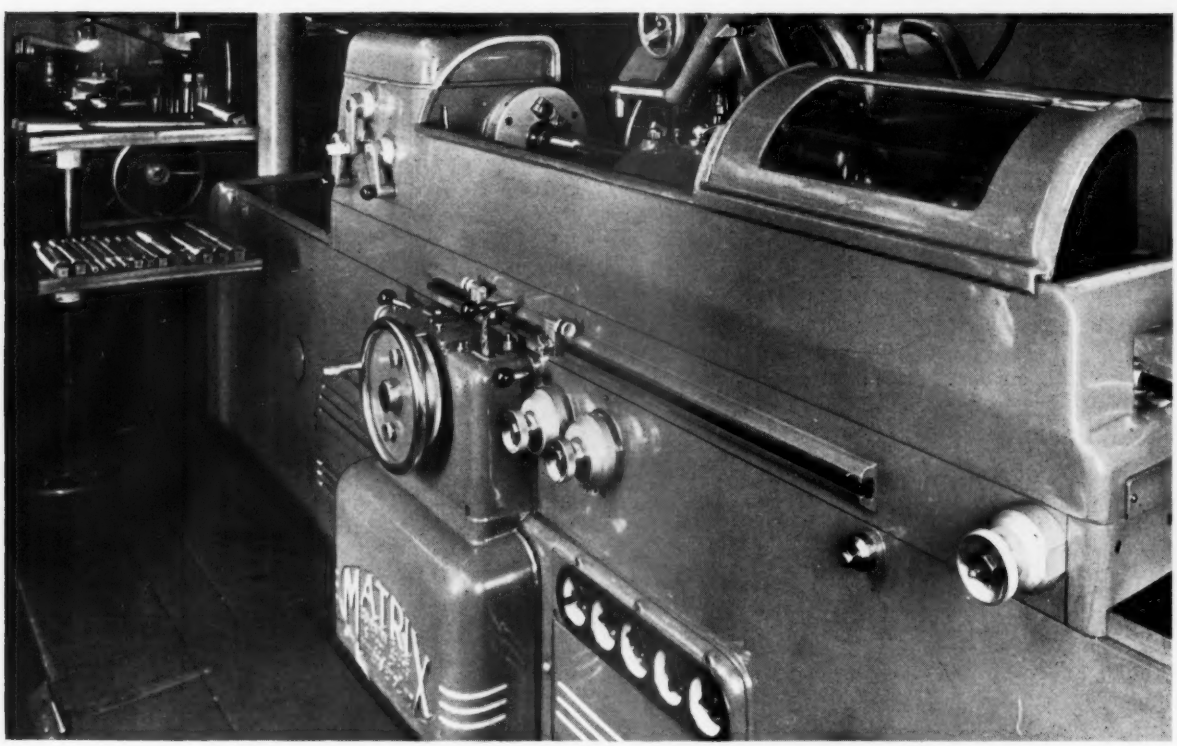
STANDARD REFERENCE FOR CORROSION TESTS.—Hitherto a difficulty in carrying out laboratory corrosion tests on protective schemes for iron and steel has been the absence of generally accepted standards of comparison. The British Iron & Steel Research Association Methods of Testing (Corrosion) Sub-Committee has now partly met this difficulty by preparing a reference stoving paint which comes within specification CS 2249. The formulation is obtainable from B.I.S.R.A., Corrosion Laboratory, 514, Bristol Road, Birmingham 29.

AID FOR HOTELS FOR FESTIVAL YEAR.—The Government is to provide financial assistance for hotels to make more and better accommodation available for dollar tourists during the Festival of Britain next year. Announcing this decision recently, Mr. Harold Wilson, President of the Board of Trade, stated that the Government recognised that the cost of hotel equipment was at present high and that the incidence of purchase tax made it an especially heavy burden for the hotel keeper. The Government had, therefore, decided to make a contribution for one year only towards the cost of equipping or re-equipping dollar-earning hotels.

# Repairs to Locomotives at Eastleigh, Southern Region

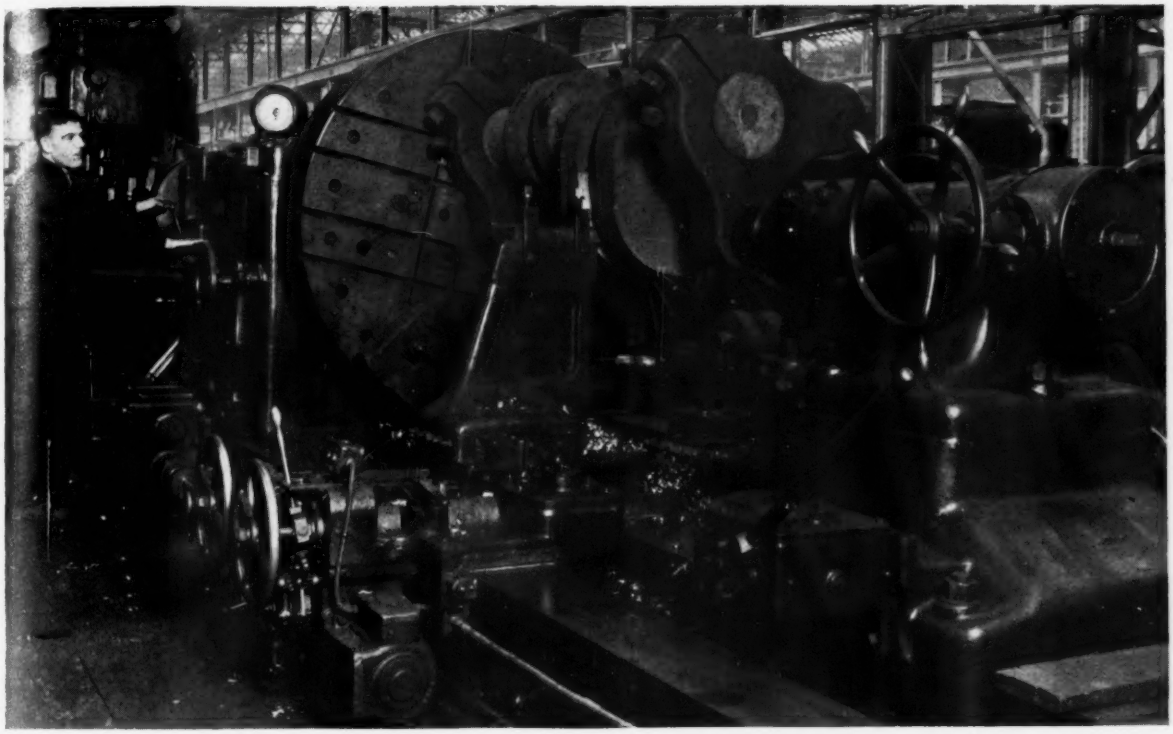



*Pearn-Richards No. 5 P.R.T. horizontal cylinder borer milling base of tail stock of quartering machine*

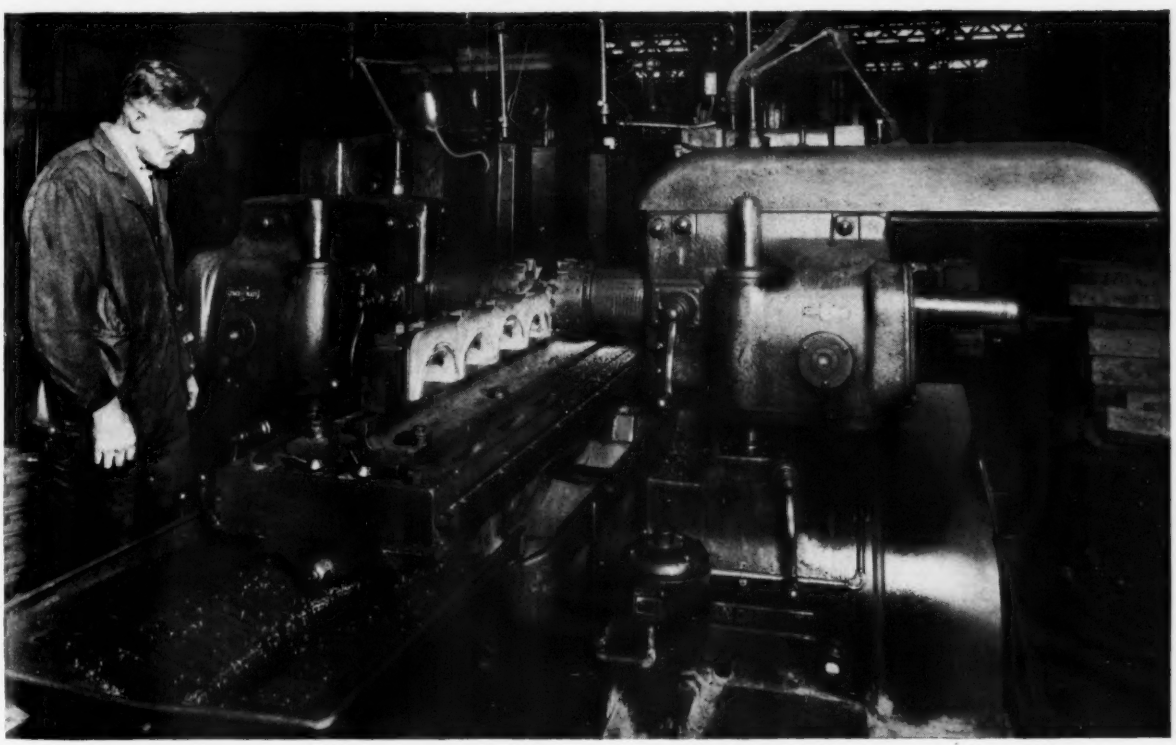



*Matrix thread grinder No. 46 installed in temperature-controlled room*

# Repairs to Locomotives at Eastleigh, Southern Region



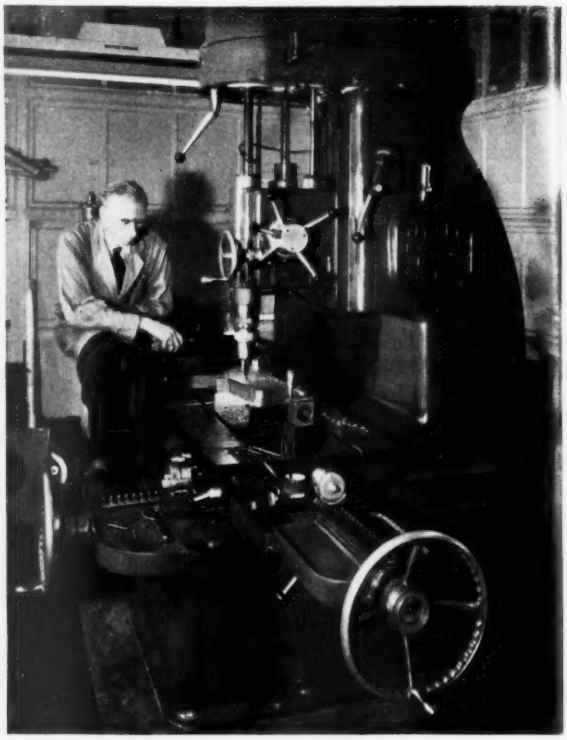
*Craven lathe 2-ft. 6-in. centres machining a "Q" class locomotive crankshaft*



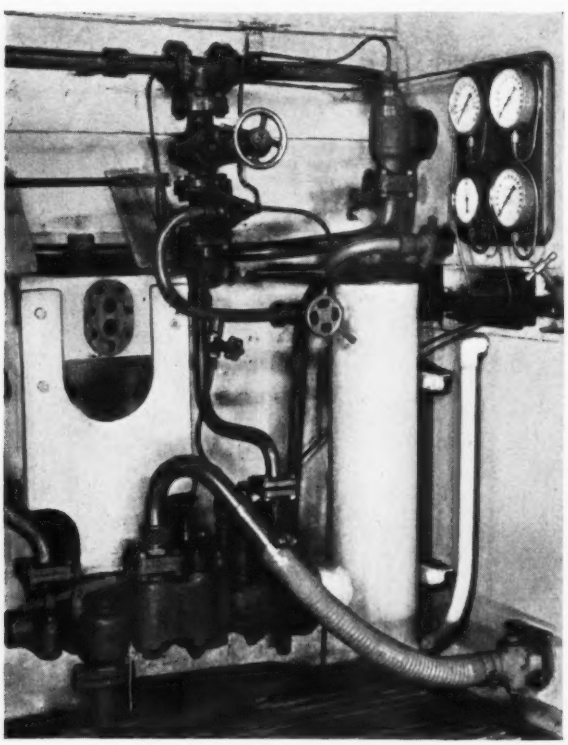
*Cincinnati Duplex Hydromatic machining both sides of locomotive big-ends simultaneously*

# Repairs to Locomotives at Eastleigh, Southern Region

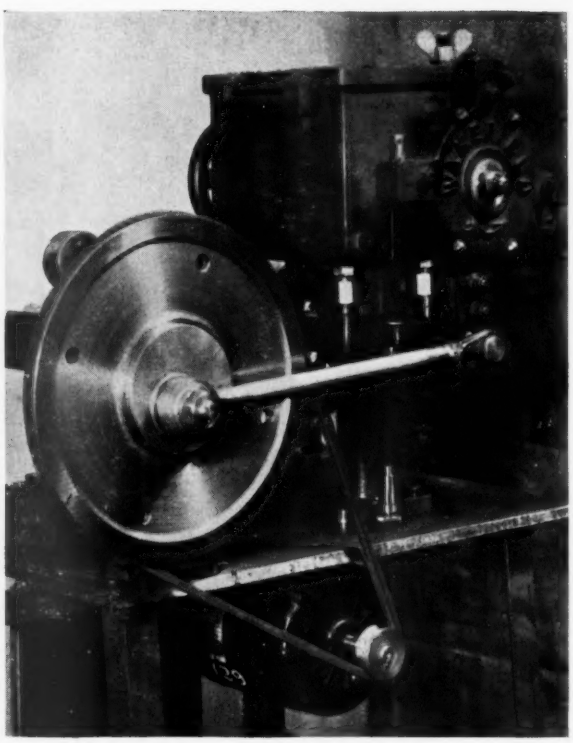
*I.C.I. salt baths and Birlec electric salt-bath installed in the tool room*



*Newall jig borer No. 1 installed in the tool room at Eastleigh Works*



*Test plant for exhaust injectors*



*Six-feed Wakefield lubricator under test*

# RAILWAY NEWS SECTION

## PERSONAL

The King, on July 4, at Buckingham Palace, conferred the honour of Knighthood upon: Mr. Archibald John Boyd, Chairman, Railway Carriage & Wagon Builders' Association and Managing Director, Metropolitan-Cammell Carriage & Wagon Co. Ltd.; Mr. Herbert Henry Hadley, C.B.E., Chairman, Coventry Gauge & Tool Co. Ltd.; Mr. George Legh-Jones, M.B.E., a Managing Director, Shell Transport & Trading Co. Ltd.; and Mr. Herbert Henry Merrett, J.P.

Queen Juliana of the Netherlands, on July 13 conferred on Mr. J. H. Brebner, O.B.E., Chief Public Relations & Publicity Officer, British Transport Commission, the decoration of Commander in the Order of Orange Nassau in recognition of the valuable services which he rendered to the Netherlands cause during the war. Mr. Brebner has also received the American Medal of Freedom with Palms from the United States and the Medaille d'Argent de Reconnaissance Française from the French Government, for services rendered during the war.

Sir Frederick Burrows, G.C.S.I., a former President of the N.U.R. and Governor of Bengal from 1945 to 1947, has been appointed to the board of Lloyds Bank Limited.

Mr. S. K. Bhattacharjee, Deputy Chief Engineer, Bengal-Nagpur State Railway, India, has proceeded on leave preparatory to retirement.

We regret to record the death in Montreal, at the age of 61, of Mr. C. W. Wells, Assistant General Freight Traffic Manager, Canadian National Railways.

Mr. P. C. Barrand, A.M.I.Mech.E., A.I.E.E., has rejoined the Brush Electrical Engineering Co. Ltd., Loughborough, as Outside Manager of the Erection Department covering turbine and electrical products of the company.

We regret to record the death in Dublin, at the age of 84, of Mr. J. M. Batchen, who supervised the construction of various railway extensions in County Donegal, at the beginning of this century; among them was the Burtonport extension of the Londonderry & Lough Swilly Railway, which has since been demolished.

Mr. F. H. Boltman has been appointed as a Commissioner on the South African Railways & Harbours Board, Pretoria, in place of Mr. W. R. T. Teichmann, whose term of office has expired. Mr. A. F. Bruyns-Haylett, Research Engineer, Chief Civil Engineer's Office, has been appointed Chief Civil Engineer, South African Railways, Johannesburg.

LONDON MIDLAND REGION APPOINTMENTS

The following staff changes are announced in the London Midland Region of British Railways:—

Mr. A. E. Aldridge, Chief Clerk, L.M.S.R. Savings Bank, Euston, to be Secretary, L.M.S.R. Savings Bank, Euston.

Mr. J. G. Woodall, Assistant Divisional Controller (Passenger Services), Divisional Operating Superintendent's Office, Derby, to be Divisional Controller (Passenger Services), Divisional Operating Superintendent's Office, Derby.

Mr. R. J. Hillard, C.M.G., who has recently been appointed General Manager of the Sudan Railways, was born at Durham in 1903 and was educated at St. Paul's School and at Christ Church, Oxford. He was selected for the Sudan Political Service in 1925 and the following year was appointed Assistant District Commissioner, Northern District of Kordofan Province. From 1930 to 1934 Mr. Hillard was Assistant Civil Secretary and between 1932 and 1934 he held an additional appointment as Secretary to the Governor-General's Council. He became District Commissioner, Northern Gejira District of Blue Nile Province in 1935 and in 1939 was appointed District Commissioner, Omdurman, Khartoum Province. Five years later he went to the War Supply Department as Assistant Controller-General and in 1946 was appointed Assistant Director, Department of Economics & Trade. Shortly afterwards Mr. Hillard became Director, Department of Economics & Trade, and also was appointed President of the Board of Economics & Trade and Managing Director, Trading Division of the Equatorial Projects Board; he became General Manager, Sudan Railways, at the end of last year. He was a Member of Governor-General's Council from 1946 till it was replaced in 1948 by the Executive Council, and was then appointed to the Executive Council as Councillor without Portfolio and also a Member of the Legislative Assembly. Mr. Hillard was one of four Sudan Government observers present at the hearing of the Anglo-Egyptian dispute before the Security Council at Lake Success in 1947. He was awarded the C.M.G. in the King's Birthday Honours List this year.

*Mr. R. J. Hillard*
Appointed General Manager, Sudan Railways

Mr. A. S. Buswell, District Passenger Superintendent, Newcastle, British Railways, North Eastern Region, has retired.

Mr. A. K. Basu, until recently Traffic Manager, Oudh Tirhut Railway, India, has been appointed Chief Commercial Manager, East Indian Railway.

Mr. Peter Scott has been appointed Publicity Manager to The English Electric Co. Ltd.

We regret to record the death on July 6 of Mr. T. H. Wakefield, M.B.E., lately District Controller at Toton, British Railways, London Midland Region.

Lt.-Colonel the Hon. C. H. C. Guest has resigned from the board of Guest Keen & Nettlefolds Limited.

Mr. R. W. J. Mackay, Chief Electrical Engineer, New South Wales Government Railways, is visiting Africa, the United Kingdom, the European Continent, and the United States to inspect railway electrical equipment.

Mr. E. S. Waddington, of the Industrial Department of Philips Electrical Limited, has been elected Vice-Chairman of the British Electrical & Allied Manufacturers' Association Arc Welding Plant Section.

Babcock & Wilcox Limited has announced that Sir John Greenly has expressed his wish to retire from the chairmanship; he will, however, remain a member of the board. His successor will be Mr. W. Lionel Fraser, who has been elected to the board and has been appointed Chairman.

Mr. J. P. Hunt, Managing Director of the Hallamshire Steel & File Co. Ltd., has been appointed Chairman of the National Association for Rolled & Re-Rolled Steel Products, in succession to Mr. H. C. Waterston, Vice-Chairman of Bairds & Scottish Steel Limited.

*Mr. D. M. Robbertze*
Appointed Assistant General Manager (Commercial), South African Railways

*Mr. J. Viljoen*
Appointed Assistant General Manager (Operating), South African Railways

*Mr. P. J. Louw*
Appointed Assistant General Manager (Technical), South African Railways

Mr. D. M. Robbertze, Chief Commercial & Industrial Manager, Headquarters, South African Railways, who, as recorded in our June 16 issue, has been appointed Assistant General Manager (Commercial), joined the railway service at Bloemfontein in 1913. He gained wide experience in transport before being transferred to Johannesburg in 1926 and subsequently served for some four years as the officer in charge of the Administration's Publicity & Travel Bureau in London. Mr. Robbertze returned to the Union in 1933 and assumed duty in the office of the Minister of Railways, where he remained until 1937. He thereafter returned to the Publicity & Travel Department as Assistant Manager and was appointed Manager a few months later. In 1942, after serving in various other posts, Mr. Robbertze was appointed Chief Rates Officer and, in 1945, became Chief Commercial & Industrial Manager; in April this year, he was confirmed in his present position of Assistant General Manager (Commercial).

Mr. J. W. Crawley, for many years a representative in the London area for Hadfields Limited, has retired.

Mr. T. P. Harris, General Purchasing Agent for Canadian National Railways, returned to Montreal by the *Empress of Canada* on July 4, after concluding his visit to study ways and means for increasing supplies from the United Kingdom and to inspect railway equipment already ordered.

Mr. J. Viljoen, Chief Operating Manager, Headquarters, South African Railways, who, as recorded in our June 16 issue, has been appointed Assistant General Manager (Operating), commenced his railway service 40 years ago. After 18 years experience in various positions, he was appointed to the General Manager's staff office where, in 1930, he became Secretary to the Staff Control. Following several transfers on promotion Mr. Viljoen was appointed Private Secretary to the Minister and Secretary to the Railway Board and, in 1940, Administrative Secretary to the Minister of Railways & Harbours. Subsequently he became System Manager at East London, and later at Pretoria. Mr. Viljoen was appointed Chief Operating Manager in 1945, and in April this year, was confirmed in his appointment to the post of Assistant General Manager (Operating).

Mr. P. J. Louw, B.A., B.Sc., M.I.C.E., Chief Civil Engineer, Johannesburg, South African Railways, who, as recorded in our June 16 issue, has been appointed Assistant General Manager (Technical), joined the South African Railways in 1916. He began his railway service on the Natal main-line deviation between Cato Ridge and Clairwood, and was appointed Assistant Engineer in 1919. Subsequently Mr. Louw was employed on survey and new construction work in various parts of the country, and was transferred to maintenance at Cape Town in 1923. He became Senior Assistant Engineer in the Transportation Department at Cape Town in 1926, and was appointed Assistant Superintendent (Maintenance) the following year. After serving as District Engineer on several systems, he successively received a number of appointments as System Engineer, and in 1942, became Acting System Manager at Windhoek. Mr. Louw was appointed System Manager, Bloemfontein, in 1943 and a year later he became Assistant Chief Civil Engineer. He was appointed as Chief Civil Engineer in 1948, and he was confirmed in the position of Assistant General Manager (Technical) in April, this year.

At the annual general meeting of the British Internal Combustion Engine Research Association on June 28, Viscount Falmouth, M.I.Mech.E., Companion I.E.E., was re-elected President of the Association for 1950-51. Lt.-General Sir Frederick G. Wrisberg, K.B.E., C.B.; Dr. S. F. Dorey, C.B.E., F.R.S.; Air Commodore F. R. Banks, C.B., O.B.E.; Sir Lynden Macassey, K.B.E., K.C.; and Major-General Clayton, C.B., C.B.E., were re-elected Vice-Presidents. Vice-Admiral (E) D. C. Maxwell, C.B., C.B.E., Engineer-in-Chief of the Fleet, was also elected a Vice-President. Mr. J. Jones, M.I.Mech.E., of the National Gas & Oil Engine Co. Ltd., was re-elected Chairman of Council.

Mr. William F. Noble, M.I.Loco.E., formerly Chief Mechanical Engineer of the Uruguay Midland, North Western & Northern Railways, has established the firm of William F. Noble & Co. Ltd. at 34, Victoria Street, London, S.W.1, referred to in our July 7 issue. Mr. W. F. Noble is the son of Mr. E. C. Noble, M.I.Mech.E., M.I.Loco.E., late C.M.E. of the Entré Rios and North East Argentine Railways.

A reorganisation has been effected at Leyland Motors Limited to spread the load of executive management over a greater number of officials. New appointments have been made which will relieve Mr. Henry Spurrier of some of the responsibilities that have fallen on him in his dual capacity of Mananging Director and General Manager of the company. Mr. Spurrier now relinquishes the position of General Manager and the responsibility of this position will be undertaken jointly by the Directors, Mr. Walter West and Mr. Stanley Markland.

Mr. H. Bastin, Goods Agent, South Lambeth, Western Region, who, as recorded in our July 7 issue, has been appointed Assistant to Commercial Superintendent (Terminals), Eastern Region, entered the service of the G.W.R. at Paddington in 1917, and in 1930 was appointed Personal Clerk to the Assistant Chief Goods Manager and Development Agent. In 1932 he was transferred to the Station Working Section of the Chief Goods Manager's Office at Paddington, which post he held until 1938, when he took up the position of Outdoor Investigator. On the outbreak of war in 1939 Mr. Bastin took charge of an Emergency Section and in 1940 he was appointed Clerk-in-Charge of the Station Working Section, Chief Goods Manager's Office. In this capacity he represented the G.W.R. on Ministry of Food and Ministry of Supply Liaison Committees and Armoured Vehicles Loading Committee until 1945, when he took over the duties of Secretary of the G.W.R. Mechanical Appliances Committee. He was subsequently appointed Goods Agent at Bristol in 1945, Assistant Goods Agent, Paddington, in 1946 and Goods Agent, South Lambeth, in 1947.

# British Transport Commission Statistics (Period No. 5)

*Summary of the principal statistics for the four-week period ending May 21*

## STAFF

| — | B.T.C. Head Office | British Railways | London Transport | British Road Services (Road Haulage) | Road Passenger (Provincial & Scottish) | Hotels & Catering | Ships & Marine | Inland Waterways | Docks, Harbours, Wharves | Railway Clearing House | Common Services: Commercial Advertisement | Legal | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number ... ... | 212 | 621,617 | 99,136 | 72,960 | 58,802 | 17,977 | 6,532 | 5,148 | 19,682 | 640 | 164 | 274 | 903,168 |
| Inc. or dec. ... | nil | +336 | +115 | +150 | +551 | +293 | +226 | —13 | +63 | —2 | —1 | +1 | +1,721 |

## BRITISH TRANSPORT COMMISSION TRAFFIC RECEIPTS

| — | Four weeks (Period No. 5) To May 21, 1950 | Four weeks (Period No. 5) To May 21, 1949 | Aggregate for 20 weeks 1950 | Aggregate for 20 weeks 1949 |
|---|---|---|---|---|
| | £000 | £000 | £000 | £000 |
| *British Railways*— | | | | |
| Passengers ... ... ... | 7,461 | 8,011 | 34,953 | 37,018 |
| Parcels, etc., by passenger train | 2,277 | 2,279 | 10,818 | 10,651 |
| Merchandise ... ... ... | 6,493 | 6,521 | 31,230 | 31,762 |
| Minerals ... ... ... | 2,478 | 2,304 | 11,876 | 11,594 |
| Coal & Coke ... ... ... | 5,869 | 5,418 | 27,780 | 26,718 |
| Livestock ... ... ... ... | 80 | 87 | 430 | 462 |
| | 24,658 | 24,620 | 117,087 | 118,205 |
| *British Railways*— | | | | |
| Delivery & other road services... | 706 | 710 | 3,330 | 3,333 |
| *Ships and Vessels* ... ... ... | 709 | 692 | 2,862 | 2,801 |
| *London Transport*— | | | | |
| Railways ... ... ... ... | 1,120 | 1,136 | 5,536 | 5,611 |
| Buses & coaches ... ... ... | 2,431 | 2,507 | 11,622 | 11,814 |
| Trams & trolleybuses ... ... | 840 | 878 | 4,081 | 4,192 |
| | 4,391 | 4,521 | 21,239 | 21,617 |
| *British Road Services*— | | | | |
| Freight charges, etc. ... ... | 4,791 | 2,168 | 22,134 | 7,963 |
| *Road Passenger Transport* ... ... | 2,655 | 2,586 | 12,259 | 11,929 |
| *Docks, Harbours & Wharves* ... | 880 | 855 | 4,324 | 4,061 |
| *Inland Waterways* ... ... ... | 125 | 125 | 585 | 594 |
| *Hotels & Catering* ... ... ... | 1,090 | 1,018 | 5,167 | 4,795 |

## LONDON TRANSPORT

| — | Passenger journeys | Inc. or dec. per cent. over 1949 | Car-miles | Inc. or dec. per cent. over 1949 |
|---|---|---|---|---|
| | 000 | | 000 | |
| Railways... ... ... ... | 50,623 | —0·6 | 18,067 | —0·8 |
| Buses & coaches ... ... | 216,046 | —1·4 | 24,305 | —0·8 |
| Trams & trolleybuses ... ... | 91,113 | —4·2 | 8,568 | —1·4 |
| Total ... ... ... | 357,782 | —2·0 | 50,940 | —0·9 |

## INLAND WATERWAYS
### Tonnage of traffic and ton-miles

| — | Tonnage per cent. | Inc. or dec. per cent. over 1949 | Ton-miles | Inc. or dec. per cent. over 1949 |
|---|---|---|---|---|
| | 000 | | 000 | |
| Coal, coke, patent fuel & peat | 481 | +4·9 | 7,360 | +10·8 |
| Liquids in bulk ... ... | 141 | —3·4 | 3,230 | — 7·2 |
| General merchandise ... ... | 330 | +1·4 | 5,369 | —12·6 |
| Total ... ... ... | 952 | +2·4 | 15,959 | — 1·9 |

## BRITISH RAILWAYS
### Rolling Stock Position

| — | Operating stock | Number under repair | Available operating stock | Serviceable stock in 1949 |
|---|---|---|---|---|
| Locomotives ... ... ... | 19,158 | 3,345 | 15,813 | 15,882 |
| Coaching vehicles ... ... | 57,111 | 4,845 | 52,266 | 50,674 |
| Freight wagons... ... ... | 1,102,764 | 89,069 | 1,013,695 | 1,050,576 |

## BRITISH RAILWAYS
### Passenger Journeys (Month of March, 1950: latest available figures)

| Full fares | Monthly returns | Excursions, cheap day, etc. | Other descriptions | Workmen | Season tickets | Total | Inc. or dec. per cent. over 1949 |
|---|---|---|---|---|---|---|---|
| 4,057,000 | 13,620,000 | 13,950,000 | 3,767,000 | 20,067,000 | 20,424,000 | 75,885,000 | +2·35 |

## BRITISH RAILWAYS
### Freight Tonnage Originating and Estimated Ton-Miles (Period No. 5)

| — | Minerals | Merchandise | Coal & coke | Livestock | Total | Inc. or dec. per cent. over 1949 |
|---|---|---|---|---|---|---|
| | 000 | 000 | 000 | 000 | 000 | |
| Tons originating ... | 4,784 | 4,233 | 13,393 | 66 | 22,476 | +1·87 |
| Ton-miles ... ... | 411,107 | 551,140* | 808,547 | — | 1,770,794 | +0·71 |

* Includes livestock

## BRITISH RAILWAYS (Period No. 5)

| — | Total steam coaching train-miles | Total electric coaching train-miles | Total freight train-miles | Freight train-miles per train engine-hour | Net ton-miles per total engine-hour | Locomotive coal consumption: Total tons | Locomotive coal consumption: Lb. per engine-mile |
|---|---|---|---|---|---|---|---|
| | 14,327,000 | 3,716,000 | 11,215,000 | 8·70 | 600 | 1,045,000 | 61·82 |
| Inc. or dec. per cent. over 1949 ... ... | +0·4 | +3·5 | +1·1 | nil | +2·5 | —0·5 | +0·2 |

# Ministry of Transport Accident Report

*Heighington, North-Eastern Region, British Railways: November* 16, 1949

Colonel D. McMullen, Inspecting Officer of Railways, Ministry of Transport, inquired into the accident which took place at about 5.43 a.m. on November 16, 1949, between Shildon and Heighington, when the 5.10 a.m. passenger train, Crook to Darlington, consisting of three coaches drawn by a J.21 class 0-6-0 engine, running tender first, travelling at about 30 m.p.h., ran into a brake van and 14 wagons, part of the 1.0 a.m. Park Lane to Darlington unfitted goods train, standing on the up line about one mile north of Heighington. There were about 120 passengers, but none was injured seriously; four complained of shock, and five railway servants were slightly injured. Goods wagons were thrown on top of each other and hit the underside of a stone arched bridge, which collapsed, completely blocking up and down lines.

The goods train had consisted of 45 wagons and the brake van before starting from Shildon marshalling yard and was hauled by a Class "Q" engine. It was dark, with drizzling rain, but that did not affect visibility of the signal and of the other lights.

The accompanying diagram shows the position of the signalboxes, etc., concerned, but without reference to the particular side of line on which they stand, and a few other details involved in the case.

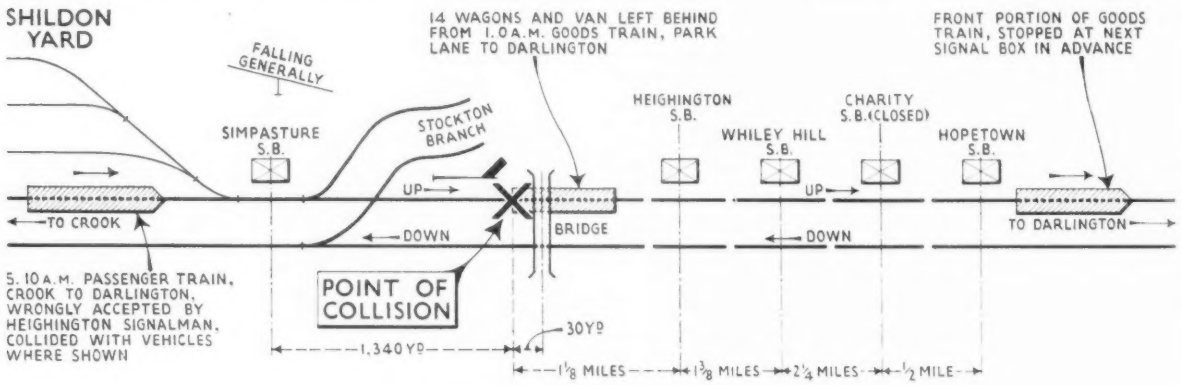



*Diagram illustrating circumstances of collision near Heighington, November* 16, 1949

## Evidence

The goods train arrived at the yard at 3.50 a.m., where its load was detached, and 45 wagons were to be attached, standing in groups of 14 and 31, with some distance between them, on one line. The driver attached his engine to the 31 wagons and propelled them to the 14 others, where the guard in charge of the train coupled the two portions, released the handbrakes, which had been applied on two of the 14 wagons, and coupled the brake van, which a learner guard had allowed to gravitate on to the train. After starting slowly away he exchanged hand signals with the guard on passing Simpasture signalbox and, reaching normal speed later, proceeded until he received the "train divided" signal at Albert Hill box, beyond Hopetown. At no time did he jerk the train, and neither he nor his fireman looked back during the journey.

The guard said he had no difficulty in coupling up the two groups of wagons and that the side and tail lamps of his van were burning brightly when he left Shildon at 5.10 a.m. After passing Simpasture he spent his time looking out on the left and completing his journal, but did not notice the adjacent branch line or beginning of a cutting. He commented on the slow progress of the train to the learner guard, without receiving a reply. He had taken off his coat because of the heat of the van stove, but was not asleep. Hearing the noise of the approaching train and seeing its headlights, he shouted to the other man and leaped out, closely followed by him. The van was still moving. They picked themselves up and proceeded to Heighington box, thinking it to be closer than Simpasture, but it was considerably further away. He agreed that he did not know where he was. At first he said he had been over the line only by night, but later admitted he had done so by day. He had had plenty of sleep the day before.

The learner guard was on the branch for the first time, supposed to be learning it, and said he had slept little during his two previous rests and had a cold. He recollected dozing in the van after running it on; the noise of the train awoke him with a start, and he jumped out after the guard. Neither driver nor fireman of the passenger train saw anything of the other one before the collision.

Colonel McMullen had to consider carefully much evidence tendered by the signalmen concerned, some of which was unsatisfactory and contradictory. The Simpasture signalman did not notice a division in the goods train and observed the tail lamp to be burning. The signalling of both trains was normal, and the first thing he knew of the accident was when the passenger guard arrived at his box. The man at Heighington originally recorded the signal for the goods train as being for a light engine and signalled it forward as such to Hopetown, Whiley Hill box then being closed. It was, however, opened before the train passed him. He felt certain he had seen the tail light and gave "train out of section" to Simpasture. A few minutes later he was rung up by Whiley Hill and asked if the train had a tail light and replied that it had. He accepted the passenger train at 5.36 a.m. and received "entering section" four minutes later. He recorded having received at 5.22 a.m. from Whiley Hill the 4-5 bell signal ("train passed without tail lamp"), which he said he actually received earlier but forgot to record. He denied having agreed the time with the other man, but it was significant that the time was the same in both registers, although there were variations of three to four minutes in the records of other signals.

The signalman at Whiley Hill declared he had endeavoured to attract the attention of Heighington at 5.40 a.m., but the latter man said he received no further signal until 5.46 a.m., when he accepted a down passenger train from there. He could not explain his failure to notice the absence of the tail lamp, nor the fact that the last vehicle of the first portion of the train was an open wagon in no way resembling a brake van. He was confident he had seen the tail lamp and assumed it to have gone out after the train passed him. In accepting the passenger train, he ignored the warning from Whiley Hill box, from which he did not hesitate to accept a down train.

A temporary signalman was at Whiley Hill, and had been there 10 months. Although he could not see the passing goods train from where he was then standing, because of the rain and intense darkness, he did not go to the window nor see any tail lights. Putting on his coat, he went on the line, but the train was then some distance away; he could see not the tail light, but two others, which he thought were side lights. Later he presumed they must have been the glow from the engine fire.

The further evidence given by this man regarding sending emergency signals and other actions was contradictory; there were assertions and denials of such matters, and an erasure in the register, as well as other points which he could not explain. However, the Hopetown signalman noticed there was no van on the train and sent "train divided" forward to the next box, where the front portion was stopped. He also sent the 4-5 bell signal to Whiley Hill and telephoned there for the down train to be stopped. About a minute after "entering section" had been received in the case of the goods train Whiley Hill called up and said:

"Will you pay special attention to the train when it passes, as Heighington said it had a van on, but I can see nothing?"

**Inspecting Officer's Conclusions**

Colonel McMullen found it impossible to establish definitely how the goods train came to be divided. The coupling links and hooks of the wagons concerned were in good condition and there had been no sudden check such as might have caused the link to jump off the hook. The division occurred between the end wagons of the two sets of vehicles coupled in the yard, and most likely the coupling operation was not performed correctly by the guard. On the falling grades after the yard the rear portion would follow closely and no division be noted.

The Heighington signalman must bear the primary responsibility for clearing the block with the goods train incomplete. He was certainly questioned by the Whiley Hill signalman, who did not send "train out of section," but Colonel McMullen doubts whether that man really did send the appropriate emergency signal. The evidence of these two men did not agree in important details, and it is more probable that the Heighington man was persuaded to accept the telephone inquiry as an emergency signal. Whether that was so or not, that man was given an opportunity to retrieve the situation, but did not take it.

It could not be established when the entry in the Heighington register was changed to refer to a goods train and not a light engine, but the signalman must have been aware that it was a goods train that was passing and had no excuse for failing to see the tail lights. Had he been alert, he would have realised that the last vehicle was not a van. His failure is regrettable, in view of his long clear record. He is 63 and has been a signalman for 28 years.

The Whiley Hill man must share the responsibility. Clearly he had not watched the train pass, being more concerned with lighting his fire. Although he did not see a tail light after going on the track, he did not send the correct bell signal forward nor it was felt such signal to the box in the rear, but contented himself with telephone messages. The reply from Heighington reassured him, but on receipt of the emergency bell signal from Hopetown he did not advise Heighington at once, although probably it was too late. The Whiley Hill man acted irresponsibly in letting a down passenger train go forward nine minutes after hearing the goods train was incomplete. Its collision with the wreckage was probably prevented only by the promptness of the fireman of the passenger train which had been involved in the accident in reaching Heighington signalbox.

The guard must bear considerable responsibility also. The accident occurred 30 min. after his van passed Simpasture box, and he had travelled only 1,340 yd. It is inconceivable that it had not stopped. He was not alert and did not know where he was. His evidence was generally unsatisfactory, and Colonel McMullen would not be surprised if he, as well as the learner guard, were asleep. He is 48, with 10 years' service, four as a guard. The learner guard is held also seriously to blame for the accident.

**Remarks**

This accident, the results of which might well have been grave, could have been avoided had any one of four responsible railway servants observed simple and fundamental safety rules, and it is a case of serious indiscipline on the part of the two signalmen and the two guards concerned; no doubt appropriate action has been taken.

The driver should have seen the brake van lights in time to reduce speed if he had been driving a tank engine, as usually used on this service, or if his engine had been running chimney first. Tender first running, especially on passenger lines, is undesirable for several reasons, and every effort should be made to avoid it.

# Economy in Civil Engineering Design

*Means of saving steel and timber in bridges and other works in India*

*By a Correspondent*

Measures to reduce the consumption of construction materials, particularly steel and timber, in the various civil engineering works as a result of organised planning and research by the Indian Railway Board were enumerated by Dr. H. J. Nichols, Member of the Board, in an address entitled "Economy in Railway Civil Engineering Design" to engineers in New Delhi.

He said that the scarcity and high cost of materials had made it urgently necessary to review current design practices and see to what extent it was possible to make available materials go further by the exercise of more calculation in drawing offices and more care in the field.

Dealing first with steel bridges, he said that the most productive source of saving was to be found in reducing the standard of loading. Additionally, considerable saving could be effected by using high tensile steel for the heavier members and mild steel for the lighter ones. Also, in tension members, economies could be effected by enlarging the effective section locally by welding on thin augmenting plates in the vicinity of a joint to compensate for reduction in section caused by rivet holes.

It was now standard practice for all open-web girder spans of 151 ft. and larger to be pre-stressed, so that they would be substantially free from deformation stresses when carrying their full designed live load.

Lateral sway and transverse bracings were usually of light section and, because the loss of effective section from rivet holes could be large in proportion to the small sections used, considerable reduction in weight could be secured by the use of welded details and connections. The Railway Board were, he said, now encouraging the widest use of welded details in main and other members of open web girders.

**Steel Trough Decking**

Referring to the use of timber in railway bridge decking, Dr. Nichols said it was illogical to introduce timber in the form of sleepers which invariably gave rise to destructive local corrosion in a structure otherwise composed entirely of metal. Serious lateral deformation stresses were also introduced into the chords with the usual design of floor which it was impracticable to avoid, though the introduction of expansion joints in the stringers was a partial cure.

The most satisfactory solution so far reached, he considered, was to substitute a deck of troughing, spanning from chord to chord, as it expanded and contracted, concertina fashion with the chords, thus avoiding all secondary stresses and replacing transverse bracing.

**Rigid-Frame Spans**

Turning to the plate girder problem, Dr. Nichols mentioned the tests being carried out at the Shakurbasti test track to compare the results of a derailed wheel passing over various forms of bridge tracks. He said it was generally possible to effect substantial savings in metal by the design of rigid-frame spans, where other conditions permitted indeterminate designs of this nature; although they involved considerably more calculation and drawing office work, they were always worth trying. A few extra hours spent in design were undoubtedly worth while if they achieved a saving in weight of steel. Such designs could be used either in steel or concrete for spans up to about 120 ft. or possibliy more; their appearance was good and greater use could be expected to be made of them in future. A few were already carrying main-line traffic, and their performance had been entirely satisfactory.

In the field of light structures, such as foot overbridges, both rigid-frame and stiffened-arch spans had been standardised; although the actual tonnage of steel saved per typical unit was small, the aggregate annual economy effected was too large to be ignored.

In fact, the steel bridge situation generally was far from static; considerable economies in metal and cost had already been effected and others were under examination. The trend was always in the direction of greater complication and greater technical skill in the drawing office, and the resulting product was a structure more closely proportioned to fulfil its functions and, therefore, more economical.

**Other Structures**

Speaking of structures other than bridges, Dr. Nichols said that in this category might be included structures not subject to the destructive effect of impact caused by running trains. Such structures were generally of much lighter section and were suitable for the unrestricted use of welding.

He then explained in detail the various steps being taken to effect economy in the use of concrete by railways, and said that India up to the present had no large concrete railway bridge spans. This was an omission which economic trends would, no doubt, soon rectify. Where foundation conditions were favourable, current developments would certainly go far to increase the competitive power of concrete and make increasingly possible the construction of attractive long-span arches which were becoming commonplace in other countries.

On the subject of permanent way, Dr. Nichols pointed out that rails accounted for about 5,000,000 tons of steel laid in the track today and the number of sleepers

was about 85,000,000. The tonnage of rail steel required annually for normal replacements was about 100,000 tons, and the number of sleepers about 3,700,000. There seemed to be little prospect of substantial improvement in either category for some years to come and here again it had been necessary to make existing resources go as far as possible. The curtailment of maximum axle-loads to 18 tons had gone some way in this direction, and the welding of rail joints saved about 5 per cent. in plain track. Meanwhile, the whole question of sleeper density in relation to subsoil conditions was under investigation. At the present time about 200,000 new sleepers were laid annually in sidings and yards, and it was intended that in future these replacements should be with pre-stressed concrete sleepers; arrangements to secure the necessary plant were now going forward.

## Staff & Labour Matters

### N.U.R. Wage Claim

A meeting of the Railway Staff National Council was held on July 7 to consider the N.U.R. claim for a pay increase for the lower-paid grades. An offer was made which would raise the lowest rate for adult male staff in conciliation grades from 92s. 6d. to 96s. a week with a comparable adjustment for clerical staff at the corresponding level.

At the N.U.R. conference at Morecambe delegates decided on July 8 to accept the offer of the Railway Executive. Acceptance is "without prejudice to any future wage arbitration on behalf of all grades of railwaymen." The conference also instructed Mr. J. B. Figgins, General Secretary, to take steps to have the terms of the offer applied to railway shopmen and all other employees under the separate Executives of the B.T.C.

The reaction of the R.C.A. and A.S.L.E.F. to the offer was not then known. Railway shopmen are not covered by negotiations which take place at the Railway Staff National Council, which was the level in the negotiating machinery at which the offer of the Railway Executive was made.

At a meeting of the Railway Staff National Council on July 11, the N.U.R. representatives intimated their acceptance of the Railway Executive offer; the A.S.L.E.F. and R.C.A. delegates stated their unions' inability to accept the offer. No agreement could be reached, and in the circumstances the N.U.R. representatives said that they would report on the situation to their union conference, and communicate further with the Railway Executive.

The resulting deadlock means that no increases can be arranged and that, after more than eight months' negotiation on the claim for the lower-paid men, the N.U.R. has gained nothing.

### Western Region Pension Scheme

Rapid developments took place last week in the dispute over membership of the G.W.R. Enginemen & Firemen's Mutual Assurance Sick & Superannuation Society. The issue of disciplinary forms to the Banbury men who refused to take duty on July 1 and 2 led to a continuance of the strike, and the men did not return to work on the Monday. On July 4, Paddington footplate staff, in sympathy with the Banbury men, decided to stage a 48-hr. strike from midnight on Friday, July 7, if the dispute were not settled. This threatened to dislocate holiday traffic to the West Country, South Wales, and Midlands. Similar action was agreed on by the Didcot staff unless the disciplinary forms were withdrawn.

On July 5, at a meeting between representatives of the Western Region, the A.S.L.E.F., and strike leaders, the men agreed to begin work at once on the understanding that the disciplinary notices would be withdrawn, and normal work was resumed shortly after midnight. The men stated, however, that they would continue the weekend strike until the decision about voluntary membership of the Mutual Assurance Society was reversed. In this they were supported by footplate staff at Paddington, Oxford, and Newton Abbot, where similar resolutions were passed by the men. The Didcot men decided against strike action, in view of the fact that the disciplinary forms issued to the staff at Banbury were withdrawn by the Railway Executive.

On July 7, the Railway Executive decided to reverse the decision regarding voluntary membership of the Mutual Assurance Society. The following official statement was issued by the Railway Executive shortly after mid-day on July 7:—

"The source of the present staff difficulties in the Western Region lies in the fact that on the former G.W.R., membership of the Enginemen's Mutual Assurance Society was compulsory, whereas on other railways membership of similar funds was voluntary. There has been a general desire on the part of the trade unions for uniformity of arrangements for promotion and redundancy. This has been effected by agreement, and the present case in the Western Region has a connection with it so far as recruitment is concerned. Further, since nationalisation, the re-organisation of Regional boundaries has resulted in many staff being transferred from one Region to another, and the policy of the Railway Executive is that staff so transferred should be allowed to retain membership of any pension fund to which they already belong, but should not be forced to join another fund in the Region to which they are transferred.

"In conformity with this policy the Executive considered it would not be fair to enginemen transferred to the Western Region to compel them to join the Society. For this reason it was decided to make membership of this fund voluntary as from July 1. Every assurance was given that no member, whether voluntary or compulsory, would have his position in regard to supplemental pension in any way worsened by this change. Despite these assurances it is unfortunate that a proportion of the enginemen in the Western Region will not accept the new arrangements.

"The Railway Executive deeply regrets that a minor domestic issue should be so magnified as to jeopardise the comfort and convenience of thousands of business and holiday travellers at summer weekends. The Executive has, therefore, decided, in the interests of the public, and in consultation with officials of the N.U.R. and A.S.L.E.F. to withdraw the recent instructions regarding voluntary adherence to the G.W.R. Enginemen's Mutual Assurance Society, and the position will revert to that existing immediately prior to July 1.

"All members of the staff concerned are being so informed immediately. The Railway Executive confidently hopes that full normal services will be maintained this weekend. There is now no point at issue with the men."

On July 8, train crews reported for duty as usual and no difficulties were experienced.

## Questions in Parliament

### Area Passenger Transport Schemes

Mr. A. Edward Davies (Stoke-on-Trent North—Lab.) on July 3 asked the Minister of Transport what progress had been made with Area Schemes for the acquisition of passenger transport under the Transport Act, 1947, and what further steps were contemplated.

Mr. Alfred Barnes (Minister of Transport): In accordance with the procedure prescribed in the eighth schedule to the Transport Act, 1947, I have returned to the British Transport Commission with my observations the scheme submitted relating to the Northern Area of England. The preparation of schemes under the Act is a matter for the Commission.

Mr. Davies: Has not sufficient time elapsed for more tangible results to be evident? At this rate we shall not get anywhere during the next ten years.

Mr. Barnes did not reply.

### Transport Consultative Committees

Mr. E. Martin Smith (Grantham—C.) on July 3 asked the Minister of Transport how many Transport Users' Consultative Committees had now been appointed and when it was proposed to appoint the others.

Mr. Alfred Barnes, in a written answer, stated: I have appointed the Central Transport Consultative Committee and Transport Users' Consultative Committees for Scotland, Wales, and London. I hope shortly to announce the proposed areas for Transport Users' Consultative Committees in the remainder of England.

## Parliamentary Notes

### Nationalised Transport

In the course of a House of Lords debate on nationalised industries on July 5, Viscount Bruce of Melbourne said that, had no steps been taken to nationalise or subsidise the railways, after a few years with road and air transport the railways could not possibly have supported the great capitals invested in them. If they wanted to keep the railways alive there was an outstanding case for the Government to come in with a subsidy. With road transport it was a different story; nationalisation was completely against the interests of this country.

Viscount Ridley said that before nationalisation there was general agreement among those concerned with one of the larger railways, the L.N.E.R., with which he was connected, that that unit itself was much too large. Instead of one Railway Executive he would have preferred five or six railway transport area boards with much more autonomy.

Lord Bilsland said that considerable concern was felt in Scotland about the emergence of a policy of curtailing facilities, apparently without a prior step to improve the receipts by the introduction of cheaper fares or better services, and without provision of adequate alternative transport. That was a policy of defeatism. There had been no effective co-ordination of main-line railway services with district bus services. There were sufficiently wide variations between Regions to call for a delegation of discretionary powers.

When the Transport Bill was published the Scottish Council represented to the Minister of Transport and the Secretary of State for Scotland that arrangements should be made to ensure devolution of executive authority in Scotland within the national transport system. An assurance was given by the Government at that time

that it would be possible, under the Bill, to devise a form of control satisfactory to the needs of Scotland; but this had not been done. A valuable instrument was lost when, on nationalisation, the Scottish Committees of the L.M.S.R. and L.N.E.R. ceased to exist.

Lord Pakenham (Minister of Civil Aviation), replying to the debate, said that some people talked as if Parliament were debarred from discussing the nationalised industries. Parliament and the public already received far more information about the nationalised than about the non-nationalised industries. Questions might be put down on all the matters on which Ministers were answerable to Parliament. Those ranged over matters of general policy, but excluded the day-to-day administration of the nationalised industries. He understood that the British Transport Commission had already dealt with over 4,000 questions and representations from Members of Parliament.

## Completion of Dijon Flyover

A key point on the Paris-Lyons main line, of which the electrification has already been completed between Laroche and Dijon as described in our issue of January 27, 1950, is the junction south of Dijon where the line to Belfort branches off the Lyons main line. Here the down line to Lyons was fouled by the up line from Belfort. With electrification and a greatly increased train service, the retention of the flat junction would have seriously impeded traffic. It was therefore decided to construct a flyover which would carry the down Lyons line over the down and up Belfort line and a relief line.

This flyover—Dijon-Perrigny—has been completed, and is described by Monsieur R. Bernis in our Belgian contemporary *La Technique des Travaux* of May-June, 1950. To permit speeds of 90 m.p.h., the structure extends over two-thirds of a mile, bridging not only the three tracks already mentioned, but also several watercourses and roads. In view of its proximity to the old town and cathedral æsthetic as well as engineering considerations played an important part in the design.

### Reinforced Concrete Superstructure

The superstructure consists of reinforced concrete, carried by stanchions spaced at 39½-46 ft., except at the flyover proper, and at the extreme ends. At the latter, short sections consist of embankments between retaining walls of concrete. At the flyover itself, the use of long skew girders was avoided by enlarging the structure to span each of the three tracks in turn. Although the superstructure is thus twice as wide in places as necessary for the one track which it carries, this solution was found to be more economical than the use of skew girders with long spans.

Special foundation works were required over part of the distance where the subsoil is very unsatisfactory. Here, 285 Franki piles nearly 40 ft. long on the average and of 18 in. dia. were used, each transmitting the load of up to 65 *tonnes* to the bearing soil. Most of these piles were driven from the level of the existing tracks, others from a narrow platform along the base of the embankment.

Difficult supplementary works were required to avoid lengthy interruptions of the train services on any of the lines concerned. To begin with, the existing bridges over the two watercourses were widened under the protection of curtains of steel-sheet piling. By co-ordination of engineering and operating requirements, and by careful planning of all the intermediate stages, the work was carried out in the comparatively short period from July, 1947, to December, 1948. Some 1,100 *tonnes* of steel, 53,000 cu. ft. of mass concrete, and 180,000 cu. ft. of reinforced concrete were needed.

Much care was taken to give the structure a satisfactory appearance. By a judicious use of steel or planed wood formwork a pleasing aspect of the concrete faces was obtained without special façade treatment. The shape and distribution of the overhead standards were carefully studied beforehand with the aid of small-scale models.

## Southern Region Debating Society Continental Tour

To mark its twenty-first anniversary, which is being celebrated this year, British Railways, Southern Region, Lecture & Debating Society arranged a Continental tour between June 12 and 23. The party left Victoria Station, London, after a short address by Mr. R. A. Savill, Chairman of the Society, and proceeded *via* Dover and Calais to Paris.

On June 13 and 14 members inspected various railway installations at Dijon in connection with the Paris-Lyons electrification and subsequently travelled to Annecy.

In the course of an excursion to Geneva, the next day, the party was conducted on a tour of the city and there were alternative visits to the motive power depot, traffic installations, or the new goods depot at La Plaine. During the visit to Annecy arrangements were made for a visit to the Barberine-Vernayez hydro-electric power plant, which supplies some 30 per cent. of the power used on the Swiss Federal Railways and has been designed so that maximum output is available in winter independent of any prevailing climatic conditions.

The second week of the tour began in Lyons, where sightseeing tours were arranged, and continued with a three-day visit to Nice. During this time opportunity was provided for visits to San Remo and Monte Carlo, and an inspection was made of the international railway station at Ventimiglia. On Thursday, June 22, the party commenced the return journey to London, arriving at Victoria the evening of the following day.

In connection with the tour, Mr. K. W. Davies, Honorary Secretary of the Society, compiled a comprehensive programme, comprising descriptive notes, technical diagrams, travel information, a foreword by Mr. C. P. Hopkins, Chief Regional Officer, Southern Region, and President of the Society, and various articles by Messrs. N. D. Ball, R. H. Ray and J. M. Leighton-Bailey, Assistant to Operating Superintendent, Southern Region.

GUEST, KEEN & NETTLEFOLDS LIMITED.—In his statement circulated with the report and accounts of Guest, Keen & Nettlefolds Limited, the Chairman, Mr. J. H. Jolly, said that achievement in 1949 was better than had seemed possible a year ago. Regarding steel nationalisation, they hoped that the power of the Government to put the legislation into effect would be nullified by events, or by a belated recognition by the Socialist Party that this doctrinaire measure would not make the same contribution to the common welfare as private enterprise. Evidence accumulated in industries already nationalised that they could not be run at a profit without substantially increasing the prices of their services to the public. Of their subsidiaries, Guest Keen Williams, Calcutta, showed a satisfactory profit due to continued demand for railway fastenings and other engineering products.

## Presentation to Mr. A. S. Buswell

*Mr. A. S. Buswell, District Passenger Superintendent, Newcastle, receiving a presentation from Mr. H. A. Short, Chief Regional Officer, North Eastern Region, accompanied by Mr. E. W. Arkle, Commercial Superintendent, at a farewell luncheon in the Royal Station Hotel, York, given by the headquarters officers of the Region on his retirement*

# Notes and News

**Assistant Chief Mechanical Engineer Required.**—An assistant chief mechanical engineer is required by a British railway company operating in Chile and Bolivia. See Official Notices on page 55.

**Vacancies for Assistant Carriage and Wagon Superintendents.**—The Nigerian Railway has vacancies for assistant carriage and wagon superintendents, under 40 years of age. See Official Notices, page 55.

**Chief Draughtsman Required.**—A chief draughtsman is required to take charge of a drawing office mainly concerned with the building of locomotives for main line and industrial use. See Official Notices on page 55.

**Vacancies for Qualified Engineers and an Architect.**—The Western Australian Government Railways Commission has vacancies for professionally qualified engineers and an architect. Full details can be found under Official Notices, page 55.

**Chief Inspector Required.**—A chief inspector is required to take charge of a works inspection department concerned with all parts of locomotives and the inspection and testing of locomotives and boilers at various stages of construction. See Official Notices on page 55.

**North Eastern Region Window Display.**—Recently the North Eastern Region of British Railways arranged a special window display for the information bureau of the Corporation of Scarborough. This is illustrated below. The parachutes were in varied gay colours, while the four figures dropping on to cut-out representations of London, Grantham, York, and Scarborough were representative of the business man, the farmer, the clergyman, and the holiday maker. The background was of sky blue and white. The floor was an ordnance map reproduction.

**Collision between Passenger Trains Running Parallel.**—One of two express trains of the Atchison, Topeka & Santa Fe Railroad, which were running eastward side by side on adjacent tracks, suddenly left the rails near Monica, Illinois, 148 miles from Chicago, on July 6, and swerved into the other. Between 50 and 75 persons were injured. Fifteen coaches were piled up in the wreckage and four telescoped.

**Sanderson Brothers & Newbould Limited.**—For the year ended December 31, 1949, a further increase in profits to £139,199 is reported by Sanderson Brothers & Newbould Limited, which, with a surplus from taxation settlements for previous years, makes £144,566, against £130,460 for 1948. Increase in provisions reduces the net profit to £55,267, of which £20,228 is transferred to the credit of subsidiaries profit and loss account, leaving £35,039 to be transferred to the holding company's appropriation account. Adding this total to £78,065 balance brought forward from last year, gives £113,104. A final dividend on the ordinary share capital is recommended of 7½ per cent., less tax, making a total of 12½ per cent., less tax, with a balance of £95,591 carried forward.

**Opening of Southampton Ocean Terminal.**—The Railway Executive announces that the Prime Minister, Mr. C. R. Attlee, has accepted an invitation to perform the opening ceremony of the new ocean terminal building at Southampton Docks on July 31. The new terminal has been designed to cater for passengers embarking and disembarking from the largest ocean liners including the *Queen Elizabeth* and the *Queen Mary*. It is a two-storey building equipped on the upper floor with waiting halls and customs examination halls and on the lower floor an island platform for boat trains and facilities for dealing with motorcars.

**Krupps Locomotives for South Africa.**—Reuters reports that the German firm of Krupps has been given a £1,696,000 order for shunting engines for South Africa. It is reported that 23 tenders were received, from Great Britain, U.S.A., Hungary, Italy, and Germany, and that Krupps' tender was the lowest.

**Increase in Brush Capital Authorised.**—At an extraordinary general meeting of the Brush Electrical Engineering Co. Ltd. in London on July 4, resolutions for the increase of the authorised capital by £1,170,000, divided into 3,200,000 ordinary shares of 5s. each and 370,000 unclassified shares of £1 each, and for the conversion of the 3,200,000 ordinary shares of 5s. each, when allotted and fully paid, into ordinary stock were passed unanimously.

**Scottish Machine Tool Corporation.**—The net profit for the year ended March 31, 1950, of the Scottish Machine Tool Corporation Ltd., after deduction of tax, was £34,682, against £33,374 for the previous year, plus £15,000 over-provision for taxation. Taxation amounted to £62,000 (£56,000). Allocations were £25,187 (£10,000). A final dividend is recommended of 5 per cent., making 8 per cent. for the year (the same); £48,694 (£41,799) is brought forward.

**Liverpool Overhead Traffics.**—There were increases in traffics of the Liverpool Overhead Railway in the first two weeks of June, but decreases in the second half of the month. The larger increase was in the

The Scarborough Flyer
is here again!
FAST TWO-WAY SERVICE
between
LONDON & SCARBOROUGH
LONDON to SCARBOROUGH
KINGS CROSS depart 11 5 am 11 45 am
Grantham arrive 1 8 pm 1 50 pm
York 2 49 pm 4 2 pm
SCARBOROUGH 3 52 pm 5 11 pm
BRITISH RAILWAYS
Free Leaflet
obtainable within.
SCARBOROUGH to LONDON
SCARBOROUGH depart 11 30 am 10 40 am
York arrive 12 25 pm 11 45 am
Grantham 2 7 pm 1 41 pm
KINGS CROSS 4 16 pm 4 5 pm
MUNICIPAL
CENTRE
SPORTS
MAY WE HELP YOU

*Window display arranged by the North Eastern Region for the information bureau of the Scarborough Corporation (see paragraph above)*

# OFFICIAL NOTICES

## Western Australian Government Railways Commission

VACANCIES for professionally qualified Engineers and Architect. Applications are invited for the following vacancies:—

*Railway and Structural Engineers* (Civil Engineering Branch):

| | Salary range |
|---|---|
| Engineer, Class II .. .. | £833-858-883 |
| .. .. III .. .. | £765-790-815 |
| Assistant Engineer, Class I .. | £696-727 |
| .. .. .. II .. | £649-669 |
| .. .. .. III .. | £604-624 |

*Mechanical Engineers* (Mechanical Branch):

| | Salary range |
|---|---|
| Engineer, Class III .. .. | £765-790-815 |
| Assistant Engineer, Class I .. | £696-727 |
| .. .. .. II .. | £649-669 |

(Engineer, Class III, should have plant and machine experience, with electrical knowledge an advantage. Assistant Engineers should have locomotive or car and wagon experience.) Applicants should be Associate Members of the Institute of Civil or Mechanical Engineers, or hold a University degree in Engineering, but equivalent qualifications will be considered, and applicants should specify position desired and if willing to accept other grades advertised.

*Architect* (Civil Engineering Branch):

| | Salary range |
|---|---|
| Assistant Engineer, Class I .. .. | £696-727 |

All salaries are in Australian currency. Applicants should be Associate Members of the Royal Institute of British Architects, or be Registered Architects. Employment will be governed by the Award of the Commonwealth Court of Arbitration to the Association of the Railway Professional Officers of Australia. Subject to satisfactory service, advancement in range is yearly. In the grades of Assistant Engineer, promotion is automatic to the maximum of Assistant Engineer, Class I, for Chartered Engineers, and to Class II for lesser qualifications. Free sea passages to Western Australia will be provided for successful applicants and dependants and half pay allowed from time of departure from United Kingdom to arrival in Western Australia. Departmental medical examination must be passed before leaving the United Kingdom. Housing accommodation in newly constructed modern Government rental houses will be arranged for married appointees. Applications (in duplicate) should be addressed to the AGENT GENERAL FOR WESTERN AUSTRALIA, Savoy House, Strand, London, W.C.2, and reach him not later than July 31, 1950. Applications must be accompanied by copies of three testimonials as to character and include a clear and concise statement of age, nationality, marital state, dependants, academic qualifications and experience, particularly railway experience, also war service (if any).

CHIEF DRAUGHTSMAN.—A Chief Draughtsman is required to take charge of a Drawing Office mainly concerned with the building of locomotives for main line and industrial use. The appointment would be to the Management Staff of the Company and would carry a pension under The United Steel Companies' Scheme. Previous locomotive drawing office experience is essential. Application forms may be had by writing to the General Manager, YORKSHIRE ENGINE CO. LTD., Meadow Hall Works, Wincobank, Sheffield.

CHIEF INSPECTOR.—A Chief Inspector is required to take charge of a Works Inspection Department concerned with all parts of locomotives and the inspection and testing of locomotives and boilers at various stages of construction. The appointment would be to the Senior Foreman Staff of the Company and would carry a pension under The United Steel Companies' Scheme. A full craft training and previous experience of locomotive building is essential. Application forms may be had by writing to the General Manager, YORKSHIRE ENGINE CO. LTD., Meadow Hall Works, Wincobank, Sheffield.

ASSISTANT CHIEF MECHANICAL ENGINEER required by British Railway Company operating in Chile and Bolivia. Candidates, preferably A.M.I.Mech.E., and/or B.Sc. (Eng.), must have completed apprenticeship in workshops of railway or locomotive builders, including drawing office experience, and held post not below District Locomotive Superintendent or Works Manager. A knowledge of Spanish will be an advantage. Salary scale £1,200/£1,500 per annum. Free quarters, passages, allowances, etc., provided. Applications, with full particulars of qualifications and experience and copies of any testimonials held, to be sent to Box 3561, c/o CHARLES BARKER & SONS LTD., 31, Budge Row, London, E.C.4.

## His Majesty's Colonial Service

VACANCIES exist for Assistant Carriage and Wagon Superintendents on the Nigerian Railways. The post is permanent and pensionable, but on agreement in the first instance. The salary scale is £660 per annum for three years to £1,300 per annum, including expatriation pay. The point of entry will depend on war service, qualifications and experience. Candidates must be under 40 years of age and should have passed the examination for Associate membership of the Institution of Mechanical Engineers or the City & Guilds of London examination in Rail Carriage Building or hold equivalent qualifications. They must have served an apprenticeship with a United Kingdom Railway Carriage and Wagon Workshop and must have had experience in the drawing office and on outdoor maintenance and have held a position of responsibility either in a workshop or outdoors. The candidates must be competent to deal with all aspects of coaching and wagon stock design and maintenance, and must have had experience both on steel and wooden body and frame construction, basic design and vacuum brake maintenance. Partly furnished quarters are provided at a rent of £60 to £90 per annum according to salary. Free passages are provided for the officer and wife, if married, on first appointment and on leave. Income tax is at local rates, which are much lower than those in the United Kingdom. Leave on full salary is granted after normal tours of 18 months at the rate of seven days for each completed month of residential service. Candidates should write at once for a form of application and further particulars to the DIRECTOR OF RECRUITMENT (COLONIAL SERVICE), COLONIAL OFFICE, Sanctuary Buildings, Great Smith Street, London, S.W.1, quoting Reference No. 27325/32.

INTERNATIONAL RAILWAY ASSOCIATIONS. Notes on the work of the various associations concerned with International traffic, principally on the European Continent. 2*s*. By post 2*s*. 2*d*. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

RAILWAY MAINTENANCE PROBLEMS. By H. A. Hull (late District Engineer, L.M.S.R.). Valuable information. With much sound advice upon the upkeep of permanent way. Cloth. 8½ in. by 5½ in. 82 pp. Diagrams. 5*s*. By post 5*s*. 3*d*. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

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week ended June 12, when receipts, at £2,741, were £130 above those for the same week in 1949. During the week ended June 25 traffics were £2,728, a decrease of £185 compared with last year, and on the aggregate were down by £5,127, at £65,574, for the current 25 weeks.

**New L.M.R. Named Train.**—On July 3 the London Midland Region of British Railways introduced a summer season special express to and from Rhyl, Old Colwyn, Colwyn Bay, and Llandudno, and when the train left Rhyl for its first run to Llandudno it was seen off by girls in Welsh costume. The train, carrying a special headboard with the replica of the Welsh Dragon, makes seven trips each day in each direction.

**Richard Thomas & Baldwins Limited.**—A final dividend is recommended of 10 per cent. on the ordinary stock of Richard Thomas & Baldwins Limited for the year ended April 1, making 15 per cent. (the same as for the preceding year) for the twelve months. The profit, before taxation, was £5,041,429 (£4,777,776), including extraneous and non-recurring profits, less losses £146,064 (£255,439); taxation amounted to £3,260,000 (£3,145,000); the net profit was £1,781,429 (£1,632,776).

**Pressed Steel Company.**—Presiding at the recent annual general meeting of the Pressed Steel Co. Ltd., the Chairman, Major Albert Pam, said that the firm was working on the production of steel railway wagons for which there was a large demand. They had obtained a contract from Australia for 16-ton hopper wagons and open-type wagons, and had within the past few weeks received an order for a large number of 16-ton mineral wagons from British Railways. These would be produced at their Linwood factory, near Glasgow. The orders mentioned would keep the Linwood factory busy for several years.

**Rail Tank Wagons for Overseas.**—In our issue of June 30, recording the bicentenary celebrations of M. & W. Grazebrook Limited, Dudley, there was a reference to a 40-ft. rail tank wagon on order for Rhodesia. Actually, this firm has no wagons on order for Rhodesia at the present time, though among overseas orders in hand are 50 bogie type wagons for the Nigerian, Gold Coast, and Ceylon railways, the majority of these wagons being 45 ft. in overall length.

**East Indian Railway Dinner.**—The 47th annual dinner of the East Indian Railway Officers' Association will take place at the Connaught Rooms, Great Queen Street, Kingsway, London, W.C.2, on September 27. The chairman will be Mr. S. J. P. Cambridge. Full details will be announced later, but, meanwhile, members are requested to note the date and make preliminary arrangements accordingly. The Honorary Secretary of the dinner is Mr. E. H. N. Lowther, The Little Gables, Folder's Lane, Burgess Hill, Sussex. The usual complementary tea party will be held at Stewarts Restaurant, Bond Street, W.1, on September 28. Full details will be announced in August. The Hon. Secretary is Mr. H. Howe, Farleyedge, Westerham, Kent.

**Great Western of Brazil Sale Agreement.**—The President of Brazil has sanctioned a law approving the sale agreement for the Great Western of Brazil Railway signed in London on May 26, 1949, which provides that the date of transfer shall be not more than 60 days after signature by the President, and that by that date the agreed purchase price is to be deposited in the Bank of England. It is hoped to call an extraordinary general meeting of preferred and ordinary stockholders six weeks after the receipt of the money, to pass the necessary resolution placing the company in voluntary liquidation. The directors see no reason to modify their estimate that the final surplus of assets over liabilities should represent not less than £7 15s. per £10 preferred and ordinary stock unit.

**Tilling-Stevens Limited.**—No dividend is to be paid this year on the ordinary capital of Tilling-Stevens Limited. The dividend paid last year was 7½ per cent., after being 5 per cent. for each of the six preceding years; this is the first year since 1937 in which the company is paying no ordinary dividend. The directors report a group loss of £31,027 for the year ended March 31, 1950 (against a profit of £57,352, after taxation of £48,647, for the previous year), and attribute the fall in profit to reduced turnover, coupled with rising costs. They state that output for the home market has been adversely affected by compulsory restrictions due to Government policy, and that difficulties have been experienced in increasing export trade, due to intensified competition and closing of certain overseas markets.

**Western Welsh Omnibus Company.**—Addressing the recent annual general meeting of the Western Welsh Omnibus Co. Ltd. the Chairman, Mr. J. S. Wills, said that the combined effect of the petrol and oil price increase and double tax would be a great addition to their annual fuel costs, and the maintenance of stage carriage fares at the low level at which they had remained for so many years was now in

jeopardy. The passenger road transport industry was now probably the most heavily taxed basic industry in the country. It seemed that the State had relegated shareholders to a rôle of considerably less importance than that of very junior partners, because the State would still continue to collect its very crippling levies even if shareholders received no dividends at all.

**British Insulated Callender's Cables.**—In his statement circulated with the report and accounts of British Insulated Callender's Cables Limited, whose results were given in our June 9 issue, the Chairman, Sir Alexander Roger, stated that railway electrification activities had been much to the fore; he instanced the firm's work for the Liverpool Street to Shenfield and Manchester to Sheffield schemes, and in the large scheme in Brazil now in progress. They had a reputation at home and abroad for overhead electric traction equipment, and it was natural, therefore, that at the recent convention in London, attended by many prominent international engineers, they took an active part in all discussions alongside the representatives of British Railways and equipment manufacturers.

**Maidstone & District Motor Services.**—Addressing the recent annual general meeting of Maidstone & District Motor Services Limited, whose results were given in our June 30 issue, the Chairman, Mr. R. P. Beddow, said that despite much present talk of the desirability of the "integration" of transport, they themselves for many years past had co-operated closely with the railways and adjacent bus undertakings. Rail and bus services were co-ordinated wherever possible, and there was interavailability in ticket facilities and mutual road and rail publicity. With increased prices, the doubling of the tax on petrol and fuel oil was a heavy additional burden. The vicious increase in taxation must in the long run affect the cost of living of all who travel by road, and to tax their industry to this extent was a poor reward for efficiency.

**Civil Defence Training School.**—The civil defence residential training school of the British Transport Commission, which was opened recently at the Grove, Watford, has been inspected by Wing-Commander Sir John Hodsoll, C.B., Director-General of Training, Home Office. Sir John Hodsoll subsequently stated that he was most impressed by what he had seen. Two three-week courses to train assistant civil defence instructors are being run and the senior instructors are all members of the staff who in turn have been trained at the Home Office schools at Easingwold and Falfield. Approximately 100 potential assistant civil defence instructors are being trained and they have been selected from over 5,000 applicants. The Commandant is Mr. E. Richardson, North Eastern Region, Railway Executive, York, who is assisted by instructors from all the Executives.

## Forthcoming Meetings

July 15 (*Sat.*)—British Railways, Southern Region. Lecture & Debating Society. Visit to Surrey Iron Railway, commencing at Coulsdon at 2.30 p.m.

July 16 (*Sun.*).—"Railway Pictorial & Locomotive Review." Great Northern Railway Centenary train between London and York, depart Kings Cross 8.55 a.m.

## Railway Stock Market

Markets have remained very quiet on further consideration of the Korean news, and there has been little buying initiative, although a further moderate rally in British Funds tended to help sentiment generally. Suggestions that the Colonial loans expected to be issued this year may not be long delayed tended to help the Gilt-edged, and there was moderate demand for long-dated stocks in which British Transport stocks participated, the 3 per cent. (1978-88) improving to 89. After easing to 99¼, the new 3½ per cent. Treasury stock, issued as interim compensation to colliery companies, firmed up to 99⅞, and is now only ⅛ below the issue price. Industrial shares generally again showed only small indefinite movements, but iron and steels steadied, helped by the big success of the John Summers debenture issue and the premium of up to 30s. established by the stock in initial dealings. Latest steel output record also helped iron and steels although an adverse factor was the renewed suggestions that the Government may be planning to make steel nationalisation effective in the lifetime of the present Parliament. Base metal and commodity shares have been generally unresponsive to the uptrend in prices in evidence since the Korean war. During the past fortnight tin has risen by £40 a ton, and rubber, although affected to some extent by the U.S.A. decision to increase synthetic output, is higher on balance at 2s. 4d. per lb.

Foreign rails attracted somewhat more attention, although the firmer prices were attributed mainly to cessation of recent selling. Great Western of Brazil have been active and higher at 150s. on the official statement that the pay-out is expected to be at least 155s. The City believes that the pay-out is likely to be made by the autumn. Leopoldina Railway stocks, which are also below estimated pay-out levels, have come in for rather more attention, and prices strengthened as a result. The ordinary was 9¼, and the preference over a point up at 27, while the 4 per cent. and 6½ per cent. debentures were 95 and 135½ respectively. Leopoldina 5 per cent. debentures were also firmer at 88½ with the ordinary units at 1s. 1½d. Brazil Rail gold bonds were quoted at 40 and San Paulo 10s. ordinary units changed hands fairly actively around 15s. On the other hand there was again uncertainty in United of Havana stocks despite talk that take-over negotiations are still proceeding and have not been abandoned.

Nevertheless, practically all prices were again lower, with the 1906 debentures down to 19¼. Taltal Rail shares changed hands around 15s. 7½d. and Nitrate Rails were 72s. 6d. White Pass Yukon 6 per cent. debentures were 66½ and Canadian Pacifics fluctuated moderately around 28¾. La Guaira Caracas were dealt in around 71, and the 5 per cent. debentures at 84, while Bolivar "C" debentures have marked 50½. Central Uruguay transferred around 9½. Mexican Central "A" bonds were 33 and National of Mexico 4½ per cent. non-assented were 25¼. Antofagasta ordinary and preference have been steadier at 6½ and 40 respectively. French railway sterling bonds kept steady, Midi and Orleans both being 95½ and Nord 102.

Apart from fluctuations in B.E.T. deferred, which recovered to 435 after touching 425, road transport shares were well maintained again. Shares of most of the companies have been purchased and held as permanent investments, and yields in most cases compare favourably with the return on leading industrials. It is not surprising, therefore, that holders are not disposed to sell. The market does not expect that British Transport will make further acquisitions of companies whose shares are held by the public until after the next General Election. Southdown have kept steady at 113s. 9d., Lancashire Transport were 78s., and West Riding 60s. S.M.T. shares have been an active market up to 16s.

Iron and steel shares kept steady with John Summers well maintained at 29s. on the success of the debenture offer and the premium of up to 30s. in the new stock. United Steel were better at 25s. 9d., while Dorman Long strengthened to 29s. 9d., and Hadfields to 25s. 4½d. Richard Thomas & Baldwins were firm at 13s. 3d.

Shares of locomotive builders and engineers were again well maintained in price, with Beyer Peacock at 22s. 1½d., North British Locomotive 16s. 10½d., Vulcan Foundry 19s. 9d., and Gloucester Wagon 52s. 6d. Wagon Repairs 5s. shares were 16s., Hurst Nelson 57s. 6d., and Charles Roberts 83s. 9d., while Birmingham Wagon strengthened to 27s. 9d.

### Traffic Table of Overseas and Foreign Railways

| | Railway | Miles open | Week ended | Traffics for week: Total this year | Traffics for week: Inc. or dec. compared with 1948/49 | No. of week | Aggregate traffics to date: Total 1949/50 | Aggregate traffics to date: Increase or decrease |
|---|---|---|---|---|---|---|---|---|
| | | | | £ | £ | | £ | £ |
| South & Central America | Antofagasta ... | 811 | 2.7.50 | 63,590 — | 13,170 | 26 | 1,542,154 — | 178,430 |
| | Costa Rica ... | 281 | Apr., 1950 | c852,959 — | c156,386 | 43 | c8,449,421 — | c1,679,807 |
| | Dorada ... ... | 70 | Apr., 1950 | 39,295 + | 9,554 | 17 | 165,766 + | 45,455 |
| | Inter. Ctl. Amer. ... | 794 | May, 1950 | $1,083,611 — | $8,330 | 21 | $5,914,799 + | $466,171 |
| | La Guaira ... ... | 22¼ | June, 1950 | $58,956 — | $36,630 | 26 | $503,317 — | $148,198 |
| | Nitrate ... ... | 382 | 30.6.50 | 24,226 + | 5,297 | 26 | 236,620 + | 16,977 |
| | Paraguay Cent. ... | 274 | 30.6.50 | ₴229,777 + | ₲124,540 | 52 | ⁄8,116,426 + | ⁄2,703,170 |
| | Peru Corp. ... | 1,050 | June, 1950 | $6,883,000 + | $2,164,878 | 52 | $71,217,058 + | $20,580,508 |
| | ,, (Bolivian Section) | 66 | June, 1950 | Bs. 4,067,000 — | Bs.3,531,834 | 52 | Bs. 110,749,664 + | Bs. 7,004,480 |
| | Salvador ... ... | 100 | Febr., 1950 | c239,000 — | c72,000 | 35 | c1,300,000 — | c139,000 |
| | Taltal ... ... | 154 | May, 1950 | 15,500 + | 4,000 | 48 | 154,420 + | 54,665 |
| Canada | Canadian National† | 23,473 | May, 1950 | 15,845,000 + | 2,450,000 | 21 | 69,391,000 + | 3,999,000 |
| | Canadian Pacific† ... | 17,037 | May, 1950 | 10,674,000 + | 517,000 | 21 | 48,324,000 — | 395,000 |
| Various | Barsi Light* ... | 167 | Apr., 1950 | 33,787 — | 7,897 | 4 | 33,787 — | 7,897 |
| | Egyptian Delta ... | 607 | 20.5.50 | 16,183 — | 1,905 | 7 | 86,611 — | 10,976 |
| | Gold Coast ... | 536 | May, 1950 | 256,113 + | 27,427 | 9 | 484,862 + | 30,111 |
| | Mid. of W. Australia | 277 | Apr., 1950 | 32,976 + | 2,904 | 43 | 308,849 + | 18,472 |
| | Nigeria ... ... | 1,900 | Jan., 1950 | 502,360 + | 38,978 | 44 | 5,017,814 + | 266,573 |
| | South Africa ... | 13,347 | 10.6.50 | 1,650,155 + | 158,592 | 12 | 15,818,865 + | 1,090,931 |
| | Victoria ... ... | 4,744 | Mar., 1950 | 1,974,774 + | 426,993 | 39 | — | — |

* Receipts are calculated at 1s. 6d. to the rupee

† Calculated at $3 to £1